

BRIGHAM YOUNG
UNIVERSITY BULLETIN



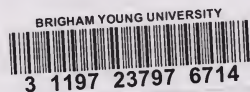
GRADUATE SCHOOL
CATALOG 1976-77

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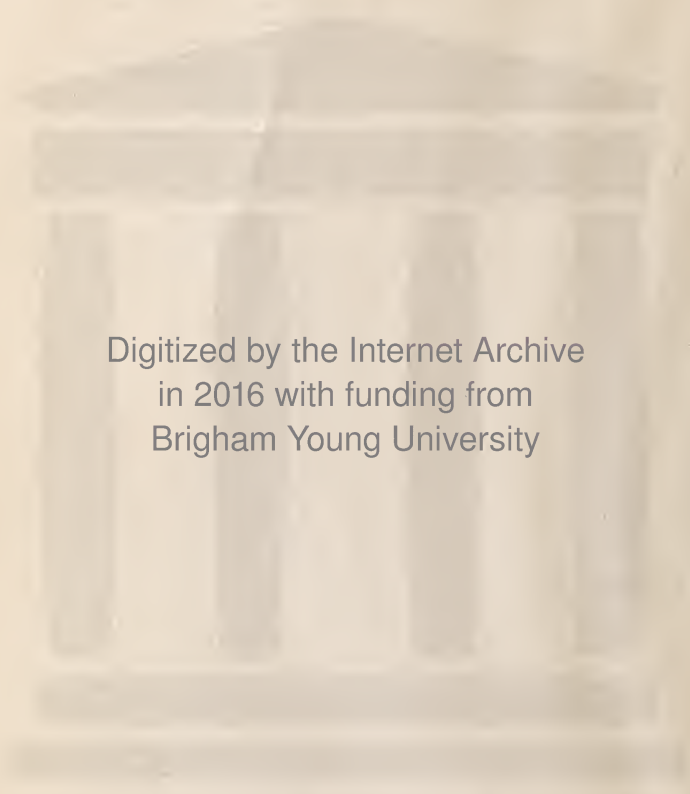




**BRIGHAM YOUNG
UNIVERSITY BULLETIN**

**GRADUATE SCHOOL
CATALOG 1976-77**





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University Calendar

Calendar for Fall Semesters

1976	1977
April 30	April 30
June 15	June 15
July 1	July 1
July 6	July 5
August 20	August 22
August 27	August 29
August 28	August 30
September 6	September 5
August 30	September 1
August 30	September 1
August 30	September 1
September 13	September 14
September 14	September 15
October 4	October 5
October 4	October 5
October 22	October 26
October 25	October 27
October 29	November 4
November 25-26	November 24-25
November 29	December 2
November 29	November 28
December 3	December 2
December 10	December 9
December 14	December 16
December 15-17	December 19-21
December 17	December 16

Calendar for Winter Semesters

1976	1977
	August 31
	October 15
	November 12
	November 30
	December 24
	January 3
	January 3
	January 4
	January 4
	January 4
	January 14
	January 17
	February 7
February 9	February 7
February 16	February 21
February 26	February 24
March 1	March 1
March 5	March 4
March 12	March 11

Last day international students may submit application for Fall Semester
 Last day transfer students and former BYU students may submit application for Fall Semester
 Last day students may make application on a nondegree basis
 Last day students may submit advance registration forms for Fall Semester
 Tuition mail-in deadline for Fall Semester
 Registration for continuing and former students who did not use advance registration system
 New student registration
 Labor Day holiday
 First day of classes
 First day change in registration permitted
 First day late registration fee assessed
 Last day for late registration and adding classes
 Fee in effect for dropping classes
 Last day to drop continuous and first-block classes for academic reasons
 Last day to officially withdraw from the University without failing grades
 Midsemester (second-block) registration
 Classes begin for second block
 Last day to drop second-block classes
 Thanksgiving holiday
 Last day to officially withdraw or drop classes for any reason
 Last date for a student in a thesis program to submit three copies of the thesis in final form and Forms 6a and 6b to the department chairman
 Last date for a student in a nonthesis program to submit Forms 6a and 6b to the department chairman
 Last day for deposition of final copies of a thesis, project, or dissertation in the Office of the Graduate Dean
 Last day of class instruction
 Final exams
 All requirements must be complete, including the makeup of incompletes and submission of Form 10 (of Form 5b for written examinations) to the Office of the Graduate Dean

Last day international students may submit application for Winter Semester
 Last day transfer students and former BYU students may submit application for Winter Semester
 Last day students may submit advance registration forms for Winter Semester
 Last day students may make application on a nondegree basis
 Tuition mail-in deadline for Winter Semester
 Registration for all students who did not use advance registration system
 New-student registration
 First day of classes
 First day change in registration permitted
 First day late registration fee assessed
 Last day for later registration and adding classes
 Fee in effect for dropping classes
 Last day to drop continuous and first-block classes for academic reasons
 Last day to withdraw officially from the University without failing grades
 Holiday—Presidents' Day
 Midsemester (second-block) registration
 Classes begin for second block
 Last day to drop second-block classes
 Last date for a student in a thesis program to submit three copies of the thesis in final form and Forms 6a and 6b to the department chairman

March 19	March 18
March 26	March 25
April 2	April 1
April 2	April 1
April 19	April 18
April 20-22	April 19-21
April 23	April 22

Calendar for Spring Terms

1976	1977
December 31	December 31
February 20	February 20
March 15	March 18
April 7	April 7
April 20	April 22
April 26	April 29
April 27	May 2
April 27	May 2
April 27	May 2
May 4	May 9
May 5	May 10
May 11	May 16
May 11	May 16
May 31	May 30
June 4	June 9
June 18	June 23

Calendar for Summer Terms

1976	1977
February 28	February 28
April 15	April 15
May 7	May 7
May 30	May 30
June 11	June 20
June 19	June 24
June 21	June 27
June 21	June 27
June 21	June 27
June 28	July 6
June 29	July 7
July 5	July 4
July 6	July 12
July 6	July 12
July 9	July 8
July 16	July 15
July 23	July 22
July 24	July 25
July 30	July 29
July 30	August 5
August 12	August 13
August 13	August 19

Last date for a student in a nonthesis program to submit Forms 6a and 6b to the department chairman
 Last day for deposition of final copies of a thesis, project, or dissertation in the Office of the Graduate Dean
 All requirements must be complete, including the make-up of incompletes and submission of Form 10 (or Form 5b for written examinations) to the Office of the Graduate Dean
 Last day to officially withdraw or drop classes for any reason
 Last day of class instruction
 Final exams
 Commencement

Last day international students may submit application for Spring Term
 Last day transfer students and former BYU students may submit application for Spring Term
 Last day students may submit advance registration forms for Spring Term
 Last day students may submit application on a non-degree basis
 Tuition mail-in deadline for Spring Term
 Registration for all students who did not use the advance registration system
 First day of classes
 First day change in registration permitted
 First day late registration fee assessed
 Last day for late registration and adding classes
 Fee in effect for dropping classes
 Last day to drop continuous classes for academic reasons
 Last day to withdraw officially from the University without failing grades
 Memorial Day holiday
 Last day to officially withdraw or drop classes for any reason
 Last day of class instruction

Last day international students may submit application for Summer Term
 Last day transfer students and former BYU students may submit application for Summer Term
 Last day students may submit advance registration forms for Summer Term
 Last day students may submit application on a non-degree basis for Summer Term
 Tuition mail-in deadline for Summer Term
 Registration for all students who did not use the advance registration system
 First day of classes
 First day change in registration permitted
 First day late registration fee assessed
 Last day for late registration and adding classes
 Fee in effect for dropping classes
 Independence Day holiday
 Last day to drop continuous classes for academic reasons
 Last day to withdraw officially from the University without failing grades
 Last date for a student in a thesis program to submit three copies of the thesis in final form and Forms 6a and 6b to the department chairman
 Last date for a student in a nonthesis program to submit Forms 6a and 6b to the department chairman
 Last day for deposition of final copies of a thesis project, or dissertation to the Office of the Graduate Dean
 Pioneer Day holiday
 All requirements must be complete, including the make-up of incompletes and submission of Form 10 (or Form 5b for written examinations) to the Office of the Graduate Dean
 Last day to officially withdraw or drop classes for any reason
 Last day of class instruction
 Commencement

Administration and Faculty

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of Education and of the Board	
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Assistant Academic Vice-President—	
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Assistant to the President—	
Special Projects	Marilyn Arnold
Assistant to the President—	
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Assistant to the President—

Special Projects	Bruce C. Hafen
Assistant to the President—	
University Relations	Bruce L. Olsen
Assistant to the President—	
Administrative	Dean A. Peterson
Assistant to the President—	
General Counsel	H. Hal Visick
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School of Library and	
Information Sciences	Maurice P. Marchant, Acting
Graduate School of Management	Merrill J. Bateman
Biological and Agricultural Sciences	A. Lester Allen
Business	Merrill J. Bateman
Education	Curtis N. VanAlfen
Engineering Sciences and Technology	Armin J. Hill
Family Living	Blaine R. Porter
Fine Arts and Communications	Lael J. Woodbury
General Studies	Marion J. Bentley, Acting
Humanities	Bruce B. Clark
Nursing	Maxine J. Cope
Physical and Mathematical Sciences	Jae R. Ballif
Physical Education	Clayne R. Jensen
Social Sciences	Martin B. Hickman

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Libraries	Donald K. Nelson, Director
Division of Continuing Education	Stanley A. Peterson

Graduate Council

Representatives of Academic Areas

Ferron L. Andersen, Biological and Agricultural Sciences.	
Term expires September 1, 1978.	
R. DerMont Bell, Business. Term expires September 1, 1978.	
Norman F. Hyatt, Education. Term expires September 1, 1978.	
Richard W. Hanks, Engineering Sciences and Technology.	
Term expires September 1, 1977.	
D. Eugene Mead, Family Living. Term expires September 1, 1976.	
Charles A. Henson, Fine Arts and Communications. Term expires September 1, 1978.	

2 ADMINISTRATION AND FACULTY

Edward L. Hart, Humanities. Term expires September 1, 1976.

Nathan M. Smith, School of Library and Information Sciences. Term expires September 1, 1977.

Camilla S. Wood, Nursing. Term expires September 1, 1977.

Donald W. Robinson, Physical and Mathematical Sciences. Term expires September 1, 1976.

Donald D. Shaw, Physical Education. Term expires September 1, 1976.

Milton V. Backman, Jr., Religious Instruction. Term expires September 1, 1976.

Spencer J. Condie, Social Sciences. Term expires September 1, 1978.

Members at Large

Wilford M. Hess, Term expires September 1, 1978.

Arthur R. Watkins, Term expires September 1, 1976.

Keith P. Anderson, Term expires September 1, 1976.

Allen E. Bergin, Term expires September 1, 1977.

Chauncey C. Riddle, Dean, Graduate School, Chairman.

Robert W. Laird, Asst. Dean, Graduate School.

Department Chairmen

Ancient Scripture Robert J. Matthews

Anthropology and Archaeology Merlin G. Myers

Art and Design W. Douglas Stout

Astronomy (See Physics and Astronomy)

Botany and Range Science Kimball T. Harper

Business Education Harold T. Smith

Chemical Engineering Science Dee H. Barker

Chemistry Eliot A. Butler

Child Development and

Family Relationships J. Joel Moss

Church History and Doctrine Larry C. Porter

Civil Engineering Science Reese J. Goodwin

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Communications M. Dallas Burnett

Computer Science C. Edwin Dean

Economics Clayne L. Pope

Education

Educational Administration Ralph B. Smith

Educational Psychology Darwin F. Gale

Elementary Education Floyd Sucher

Instructional Science Harvey B. Black

Secondary Education and

Foundations Wallace E. Allred

Electrical Engineering Science Ferril A. Losee

English Richard H. Cracroft

Food Science and Nutrition John M. Hill

French and Italian Norman C. Turner

Geography Robert L. Layton

Geology Morris S. Petersen

Germanic Languages Garold N. Davis

Health Science Ray Watters

History Ted J. Warner

Home Economics Education Ruth E. Brasher

Humanities and Comparative Literature Todd A. Britsch

Industrial Education William E. McKell

Linguistics Rey L. Baird

Mathematics Kenneth L. Hillam

Mechanical Engineering Science

(Acting) Blaine W. Andersen

Microbiology David M. Donaldson

Music A. Harold Goodman

Nursing Maxine J. Cope

Physical Education Elmo S. Roundy

Physics and Astronomy B. Kent Harrison

Political Science Ray C. Hillam

Psychology Darhl M. Pedersen

Recreation Education William J. Hafen

Sociology Spencer J. Condie

Spanish and Portuguese M. Carl Gibson

Statistics H. Gill Hilton

Theatre and Cinematic Arts Charles L. Metten

Zoology Clive D. Jorgensen

Graduate Coordinators

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Ancient Scripture Robert J. Matthews

Anthropology and Archaeology Dale L. Berge

Art and Design Floyd E. Breinholt

Astronomy (See Physics and Astronomy)

Botany and Range Science Leslie Whitton

Business Education R. DerMont Bell

Chemical Engineering Science Richard W. Hanks

Chemistry James M. Thorne

Biochemistry Fred G. White

Child Development and

Family Relationships J. Joel Moss

Family Studies Wesley Burr

Church History and Doctrine LaMar C. Berrett

Civil Engineering Science S. Olani Durrant

Classical, Biblical, and

Middle Eastern Languages R. Douglas Phillips

Communications Ralph D. Barney

Computer Science Bill R. Hays

Economics J. Kenneth Davies

Education

Educational Administration Ralph B. Smith

Educational Psychology Darwin F. Gale

Communicative Disorders Parley W. Newman

Elementary Education (Master's) Ruel A. Allred

Elementary Education (Doctorate) Frank W. Harmon

Instructional Science D. Cecil Clark

Secondary Education and Foundations Ivan D. Musé

Electrical Engineering Science Paul O. Berrett

English William A. Wilson

Food Science and Nutrition John Hal Johnson

French and Italian Douglas M. Kimball

Geography Alan H. Grey

Geology Myron G. Best

Germanic Languages Marvin H. Folsom

Health Science Donald D. Shaw

History Thomas G. Alexander

Home Economics Education Ruth E. Brasher

Humanities and Comparative Literature Jon D. Green

Industrial Education William E. McKell

Latin

Linguistics Rey L. Baird

Teaching English as a

Second Language (TESL) Rey L. Baird

Mathematics Lawrence Fearnley

Mechanical Engineering Science Howard S. Heaton

Microbiology Richard D. Sagers

Music Quentin R. Nordgren

Nursing Camilla S. Wood

Physical Education Donald D. Shaw

Physics and Astronomy J. Dean Barnett

Political Science Melvin P. Mabey

Psychology Donovan E. Fleming

Recreation Education Donald D. Shaw

Sociology Howard M. Bahr

Spanish and Portuguese Harold E. Rosen

Speech Brent D. Peterson

Statistics Gale Rex Bryce

Theatre and Cinematic Arts Karl T. Pope

Zoology H. Duane Smith

Coordinators of Areas

Asian Studies Russell N. Horiuchi

Latin-American Studies Thomas Edgar Lyon, Jr.

Faculty of the Graduate School

The faculty of the Graduate School consists of members of the general faculty who are approved by a committee of graduate faculty from among those who hold the rank of professor or associate professor, or assistant professor with a doctoral degree. For special reasons related to exceptional qualification, the Graduate Council is authorized to appoint to the graduate faculty a member who does not hold the doctoral degree.

Faculty

- George M. Addy** Professor of History (1957). B.A., M.A., Brigham Young University, 1948, 1950; Ph.D., Duke University, 1957.
- Stan L. Albrecht** Associate Professor of Sociology (1974). B.S., Brigham Young University, 1966; M.A., Ph.D., Washington State University, 1968, 1970.
- Thomas G. Alexander** Professor of History (1964). B.S., M.S., Utah State University, 1960, 1961; Ph.D., University of California at Berkeley, 1965.
- A. Lester Allen** Professor of Zoology; Dean, College of Biological and Agricultural Sciences (1954). B.A., Ph.D., University of California at Los Angeles, 1946, 1951.
- Dell K. Allen** Associate Professor of Mechanical Engineering Technology (1960). B.S., Utah State University, 1954; M.S., Brigham Young University, 1966; Ed.D., Utah State University, 1973.
- James B. Allen** Professor of History (1963). B.S., Utah State University, 1954; M.A., Brigham Young University, 1956; Ph.D., University of Southern California, 1963.
- Laura E. Alley** Associate Professor of Nursing (1972). B.S., M.S., University of Utah, 1966, 1968.
- Stephen L. Alley** Professor of Secondary Education and Foundations (1956). B.S., M.S., University of Utah, 1947, 1951; Ed.D., Harvard University, 1958.
- Dorald M. Allred** Professor of Zoology (1956). B.A., M.A., Brigham Young University, 1950, 1951; Ph.D., University of Utah, 1954.
- G. Hugh Allred** Associate Professor of Child Development and Family Relationships (1966). B.A., M.A., Brigham Young University, 1957, 1960; Ed.D., University of Oregon, 1966.
- R. Chase Allred** Professor of Agronomy (1955). B.S., Brigham Young University, 1948; M.S., Kansas State College, 1949; Ph.D., University of Nebraska, 1952.
- Ruel Acord Allred** Professor of Elementary Education (1973). B.S., M.S., Brigham Young University, 1954, 1958; Ed.D., University of Oregon, 1965.
- Wallace E. Allred** Associate Professor of Secondary Education and Foundations (1956). B.S., M.Ed., Brigham Young University, 1956, 1957; M.S., Oregon State University, 1964; Ph.D., University of Utah, 1971.
- Philip E. Allsen** Professor of Physical Education for Men (1966). B.S., Ricks College, 1955; M.S., Brigham Young University, 1960; Ed.D., University of Utah, 1965.
- Blaine Wright Andersen** Professor of Mechanical Engineering Science (1970). B.S., University of Utah, 1949; M.S., Ph.D., University of Illinois, 1951, 1953.
- Ferron Lee Andersen** Professor of Zoology (1966). B.S., M.S., Utah State University, 1957, 1960; M.S., University of Illinois, 1962; Ph.D., Utah State University, 1963.
- H. Verlan Andersen** Professor of Accounting (1965). B.S., Brigham Young University, 1940; J.D., Stanford University, 1946; LL.M., Harvard University, 1948.
- William Ralph Andersen** Professor of Botany (1966). B.S., M.S., Utah State University, 1956, 1958; Ph.D., University of California, 1963.
- A. Gary Anderson** Assistant Professor of Church History and Doctrine (1971). B.S., University of Utah, 1958; M.S., Ed.D., Brigham Young University, 1960, 1968.
- C. Dixon Anderson** Professor of Spanish (1956). B.A., Brigham Young University, 1953; M.A., Ph.D., University of Texas, 1956, 1965.
- Enid R. Anderson** Assistant Professor of Elementary Education (1968). B.S., Utah State University, 1951; M.A., Denver University, 1956; Ed.D., University of Utah, 1972.
- Keith P. Anderson** Professor of Chemistry (1953). B.S., Brigham Young University, 1946; Ph.D., Cornell University, 1950.
- Lane K. Anderson** Assistant Professor of Accounting (1970). B.A., M.Acc., Brigham Young University, 1965, 1966; M.B.A., Ph.D., University of Wisconsin, 1970; CPA, Utah, 1970.
- Richard L. Anderson** Professor of History and Ancient Scripture (1955). B.A., M.A., Brigham Young University, 1951, 1957; J.D., Harvard Law School, 1954; Ph.D., University of California at Berkeley, 1962.
- Hyrum L. Andrus** Professor of Church History and Doctrine (1956). B.S., Ricks College, 1951; M.S., Brigham Young University, 1952; DSS, Syracuse University, 1955.
- Gerald M. Armstrong** Associate Professor of Mathematics (1970). B.S., M.S., Brigham Young University, 1963, 1965; Ph.D., University of Wisconsin, 1971.
- Marilyn Arnold** Associate Professor of English (1969). B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., University of Wisconsin, 1968.
- Leonard J. Arrington** Professor of History; Redd Chair of Western History; Director of the Charles Redd Center for Western Studies (1972). B.A., University of Idaho, 1939; Ph.D., University of North Carolina, 1952.
- Nadine Taylor Ashby** Assistant Professor of Business Education (1960). B.A., Brigham Young University, 1936; M.A., Colorado State College, 1959; Ph.D., University of North Dakota, 1971.
- Josette Ashford** Instructor of French (1969). B.A., Ph.D., Brigham Young University, 1967, 1972.
- Alan C. Ashton** Assistant Professor of Computer Science (1972). B.A., Ph.D., University of Utah, 1966, 1970.
- Peter P. Ashworth** Assistant Professor of Spanish (1966). B.A., Brigham Young University, 1962; Ph.D., University of Oklahoma, 1967.
- Milton V. Backman, Jr.** Professor of Church History and Doctrine (1960). B.S., M.A., University of Utah, 1954, 1955; Ph.D., University of Pennsylvania, 1959.
- James Logan Baer** Associate Professor of Geology (1969). B.S., Ohio State University, 1957; M.S., Ph.D., Brigham Young University, 1962, 1968.
- Howard Miner Bahr** Professor of Sociology (1973). B.A., Brigham Young University, 1962; M.A., Ph.D., University of Texas, 1964, 1965.
- Stephen Joseph Bahr** Associate Professor of Child Development and Family Relationships (1973). B.S., M.S., Brigham Young University, 1968, 1969; Ph.D., Washington State University, 1972.
- James E. Baird** Assistant Professor of Elementary Education (1973). B.S., M.S., Brigham Young University, 1959, 1962; Ph.D., University of Utah, 1973.
- J. Hugh Baird** Professor of Secondary Education and Foundations (1963). B.S., M.S., University of Utah, 1954, 1954; Ed.D., University of California at Berkeley, 1962.
- Ray L. Baird** Associate Professor of Linguistics (1961). B.A., University of Utah, 1960; M.A., Brigham Young University, 1962; Ph.D., University of Indiana, 1974.
- Joseph O. Baker** Associate Professor of German (1967). B.A., University of Utah, 1964; Ph.D., Tulane University, 1968.
- William H. Baker** Assistant Professor of Business Education (1970). B.S., College of Southern Utah, 1969; M.S., Brigham Young University, 1970; Ph.D., Oklahoma State University, 1974.
- Jae R. Ballif** Professor of Physics; Dean, College of Physical and Mathematical Sciences (1962). B.S., Brigham Young University, 1953; M.A., Ph.D., University of California at Los Angeles, 1961, 1962.
- Blauer L. Bangertter** Professor of Physical Education (1953). B.A., Brigham Young University, 1951; M.S., Ph.D., University of Utah, 1955, 1964.
- Dee H. Barker** Professor of Chemical Engineering (1959). B.S., Ph.D., University of Utah, 1948, 1951; Registered Professional Engineer, Utah, 1963.

- Ruel Barker** Associate Professor of Physical Education (1971). B.S., Utah State University, 1961; M.S., Ed.D., Brigham Young University, 1964, 1971.
- Howard W. Barnes** Associate Professor of Business Management (1964). A.B., Harvard College, 1955; MBA, University of Southern California, 1963; Dr. rer. pol., Technische Universität Braunschweig, 1968.
- James R. Barnes** Associate Professor of Zoology (1969). B.S., Brigham Young University, 1963; M.S., Ph.D., Oregon State University, 1967, 1972.
- J. Dean Barnett** Professor of Physics (1958). B.A., Ph.D., University of Utah, 1954, 1959.
- Ralph Dale Barney** Associate Professor of Communications (1971). B.S., Brigham Young University, 1957; M.A., University of Iowa, 1960; Ph.D., University of Missouri, 1971.
- Howard H. Barron** Professor of Church History and Doctrine (1953). B.S., M.S., Utah State University, 1943, 1950; Ed.D., University of Utah, 1953.
- George S. Barrus** Professor of Communications (1967). B.S., University of Utah, 1950; M.A., Brigham Young University, 1964; Ph.D., University of Iowa, 1969.
- Calvin H. Bartholomew** Assistant Professor of Chemical Engineering (1973). B.E., Brigham Young University, 1968; M.S., Ph.D., Stanford University, 1972.
- Cliff Smith Barton** Professor of Civil Engineering (1959). B.S., Utah State University, 1947; M.S., Ph.D., Rensselaer Polytechnic Institute, 1953, 1959.
- James R. Barton** Professor of Civil Engineering (1967). B.S., University of New Mexico, 1944; M.S., University of Iowa, 1946; Ph.D., Colorado State University, 1958; Registered Engineer, Utah, 1949.
- Robert W. Bass** Professor of Physics (1972). B.A., Johns Hopkins University, 1950; M.A. Oxon., Oxford University, 1952; Ph.D., Johns Hopkins University, 1955.
- Arthur R. Bassett** Assistant Professor of Humanities and Comparative Literature (1972). B.S., MRE, Brigham Young University, 1960, 1965; Ph.D., Syracuse University, 1975.
- J. LaVar Bateman** Professor of Speech (1949). B.A., Brigham Young University, 1941; M.S., Ph.D., University of Wisconsin, 1947, 1950.
- Merrill J. Bateman** Professor of Economics; Dean, College of Business (1975). B.S., University of Utah, 1960; Ph.D., Massachusetts Institute of Technology, 1965.
- Edith Bartholomew Bauer** Professor of Educational Psychology (1945). B.A., M.A., Brigham Young University, 1930, 1946; Ph.D., University of California at Berkeley, 1956.
- Richard S. Beal** Assistant Professor of Political Science (1975). B.A., M.A., Brigham Young University, 1970, 1970; Ph.D., University of Southern California, 1976.
- LeRoy Wood Bearns** Associate Professor of Electrical Engineering (1972). BSEE, University of Utah, 1961; MSEE, Syracuse University, 1965; Ph.D., Auburn University, 1970.
- Jay V. Beck** Professor of Microbiology (1951). B.A., M.A., Brigham Young University, 1933, 1936; Ph.D., University of California at Berkeley, 1940.
- Raymond E. Beckham** Associate Professor of Communications (1970). B.S., M.A., Brigham Young University, 1949, 1969; Ph.D., Southern Illinois University, 1972.
- R. DerMont Bell** Professor of Business Education (1957). B.S., M.S., Brigham Young University, 1955, 1956; Ph.D., University of Southern California, 1960.
- Parley L. Belpap** Associate Professor of Music (1965). B.A., M.A., Brigham Young University, 1950, 1956; Premier Prix, Royal Flemish Conservatory, Belgium, 1960; Diplôme Supérieur, Royal Flemish Conservatory, Belgium, 1964; DMA, University of Colorado, 1975.
- W. Dwayne Belt** Professor of Secondary Education and Foundations (1961). B.A., Brigham Young University, 1952; M.A., Ed.D., Colorado State College, 1958, 1961.
- Marion Bennion** Professor of Food Science and Nutrition (1952). B.S., Utah State University, 1947; M.S., Teachers College, Columbia University, 1949; Ph.D., University of Wisconsin, 1956.
- Robert C. Bennion** Professor of Psychology (1961). B.A., Brigham Young University, 1956; M.A., Ph.D., Ohio State University, 1959, 1961.
- Dale L. Berge** Associate Professor of Anthropology and Archaeology (1967). B.S., M.A., Brigham Young University, 1961, 1964; M.A., Ph.D., University of Arizona, 1967, 1968.
- Allen Eric Bergin** Professor of Psychology (1972). B.S., M.S., Brigham Young University, 1956, 1957; Ph.D., Stanford University, 1960.
- LaMar C. Berrett** Professor of Church History and Doctrine (1963). B.S., University of Utah, 1952; M.S., Ed.D., Brigham Young University, 1960, 1963.
- Paul O. Berrett** Professor of Electrical Engineering (1964). B.S., University of Utah, 1953; M.S., University of Southern California, 1955; Ph.D., University of Utah, 1965.
- Max J. Berryessa** Professor of Elementary Education (1948). B.S., M.S., Brigham Young University, 1948, 1949; Ed.D., Stanford University, 1959.
- Brian Stanley Best** Associate Professor of English (1960). B.S., M.A., Brigham Young University, 1958, 1962; Ph.D., University of Wisconsin, 1971.
- Myron G. Best** Professor of Geology (1965). B.S., University of Utah, 1957; Ph.D., University of California at Berkeley, 1961.
- Rollie Ray Bestor** Assistant Professor of Physical Education (1969). B.S., M.S., University of Wisconsin, 1954, 1958; Ed.D., Brigham Young University, 1969.
- Connie J. Bethers** Associate Professor of Nursing (1966). B.S., University of Utah, 1954; M.Ed., Columbia University, 1965.
- Gary Boyd Beus** Associate Professor of Statistics (1967). B.A., Brigham Young University, 1962; M.S., Ph.D., Virginia Polytechnic Institute, 1965, 1968.
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- James L. Bills** Professor of Chemistry (1962). B.S., University of Utah, 1958; Ph.D., Massachusetts Institute of Technology, 1963.
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- Russell H. Bishop** Associate Professor of Elementary Education (1966). B.A., M.A., University of Utah, 1954, 1964; Ph.D., University of Oregon, 1966.
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- Robert W. Blair** Professor of Linguistics (1959). B.A., M.A., Brigham Young University, 1955, 1957; Ph.D., Indiana University, 1964.
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- Andrew L. Gardner** Professor of Physics (1964). B.S., Utah State University, 1940; Ph.D., University of California at Berkeley, 1955.
- John H. Gardner** Professor of Physics (1949). B.S., Utah State University, 1943; M.A., Ph.D., Harvard University, 1947, 1950.
- Robert Wayne Gardner** Professor of Animal Science (1966). B.S., Utah State University, 1958; M.S., Ph.D., Cornell University, 1960, 1962.
- Willard Hale Gardner** Associate Professor of Computer Science; Assistant Director, Manager of Computer Research Center (1963). B.S., Utah State University, 1948; M.S., Brigham Young University, 1956.
- Lynn E. Garner** Associate Professor of Mathematics (1963). B.S., Brigham Young University, 1962; M.A., University of Utah, 1964; Ph.D., University of Oregon, 1968.
- LaMar E. Garrard** Associate Professor of Church History and Doctrine (1967). B.S., University of Idaho, 1949; M.S., Ph.D., Brigham Young University, 1955, 1968.
- Ray H. Garrison** Associate Professor of Accounting (1966). B.S., M.S., Brigham Young University, 1960, 1961; CPA, Colorado, 1962; DBA, Indiana University, 1966.
- Byron W. Gassman** Professor of English (1960). B.A., Brigham Young University, 1955; M.A., Ph.D., University of Chicago, 1956, 1960.
- Edward A. Geary** Associate Professor of English (1968). B.A., M.A., Brigham Young University, 1960, 1963; Ph.D., Stanford University, 1971.
- Burton C. Gee** Professor of Mathematics (1960). B.S., Brigham Young University, 1951; M.S., Ed.D., Oregon State University, 1958, 1965.
- J. Douglas Gibb** Associate Professor of Speech (1969). B.S., M.A., University of Utah, 1963, 1964; Ph.D., Wayne State University, 1966.

- Rendol L. Gibbons** Associate Professor of Music (1964). B.A., M.A., Northern Arizona University, 1947, 1954; Ph.D., University of Colorado, 1969.
- M. Carl Gibson** Professor of Spanish (1949). B.A., M.A., Brigham Young University, 1947, 1949; Ph.D., University of Oregon, 1960.
- Gurcharan S. Gill** Professor of Mathematics (1960). B.S., Brigham Young University, 1958; M.S., Ph.D., University of Utah, 1960, 1965.
- Joseph M. Glassett** Associate Professor of Chemical Engineering (1966). B.S., University of Utah, 1947; M.S., Massachusetts Institute of Technology, 1948; Registered Professional Engineer, 1956.
- Preston R. Gledhill** Professor of Theatre and Cinematic Arts (1947). Degré Supérieur, La Sorbonne, 1938; B.A., Brigham Young University, 1939; M.A., Louisiana State University, 1940; Ph.D., University of Wisconsin, 1951.
- J. Rex Goates** Professor of Chemistry (1947). B.S., Brigham Young University, 1942; Ph.D., University of Wisconsin, 1947.
- A. Harold Goodman** Professor of Music (1960). B.A., University of Arizona, 1947; M.Mus., Ed.D., University of Southern California, 1951, 1960.
- R. Irwin Goodman** Associate Professor of Educational Psychology (1969). B.A., University of California at Los Angeles, 1955; M.S., Ed.D., Indiana University, 1961, 1969.
- William Dale Goodson** Associate Professor of Career Orientation (1965). B.S., Ricks College, 1952; M.S., Ed.D., Brigham Young University, 1956, 1969.
- Frederick R. Gowans** Assistant Professor of Indian Education (1972). B.S., M.S., Ph.D., Brigham Young University, 1960, 1963, 1972.
- John A. Green** Professor of French (1964). B.A., M.A., Brigham Young University, 1954, 1955; Ph.D., University of Washington, 1960.
- Jon Dean Green** Assistant Professor of Humanities and Comparative Literature (1970). B.A., M.A., Brigham Young University, 1966, 1968; Ph.D., Syracuse University, 1972.
- Alan H. Grey** Associate Professor of Geography (1964). B.A., Brigham Young University, 1959; M.A., Ph.D., University of Wisconsin, 1960, 1963.
- Earl Louis Grossen** Assistant Professor of Secondary Education and Foundations (1971). B.S., University of Utah, 1958; Special Diplomas, University of Michigan and American University at Beirut, 1962, 1964; M.A. equivalent, University of Washington, 1967; Ph.D., University of Utah, 1971.
- Jerry Dee Grover** Associate Professor of Industrial Education (1968). B.S., M.E., Utah State University, 1956, 1961; Ed.D., Brigham Young University, 1968.
- Stewart L. Grow** Distinguished Professor of History and Political Science (1947). B.S., M.S., Brigham Young University, 1935, 1948; Ph.D., University of Utah, 1954.
- Clark J. Gubler** Professor of Chemistry (1958). B.A., Brigham Young University, 1939; M.A., Utah State University, 1941; Ph.D., University of California, 1945.
- Donworth V. Gubler** Associate Professor of Russian and German (1949). B.A., M.A., Ph.D., Brigham Young University, 1948, 1949, 1971.
- Richard L. Gunn** Professor of Art and Education (1948). B.S., M.S., Brigham Young University, 1947, 1950; Ed.D., Stanford University, 1955; Banff School of Fine Arts.
- Brent Que Hafen** Associate Professor of Health Science (1969). B.S., M.S., University of Utah, 1963, 1965; Ph.D., Southern Illinois University, 1969.
- William J. Hafen** Professor of Recreation Education (1954). B.S., Brigham Young University, 1950; M.A., Washington State University, 1953; D.R., Indiana University, 1960; Ed.D., University of Utah, 1968.
- H. Tracy Hall** Distinguished Professor of Chemistry (1955). B.S., M.S., Ph.D., University of Utah, 1942, 1943, 1948.
- Wendell H. Hall** Associate Professor of Spanish (1966). B.A., M.A., University of Utah, 1952, 1953; Ph.D., Inter-American University, 1974.
- John R. Halliday** Professor of Music (1936). B.A., M.A., Brigham Young University, 1935, 1936; Ph.D., Eastman School of Music, University of Rochester, 1941.
- W. Kenneth Hamblin** Professor of Geology (1963). B.A., M.S., Brigham Young University, 1953, 1954; Ph.D., University of Michigan, 1958.
- Ruth K. Hammond** Assistant Professor of Educational Psychology (1966). B.S., M.S., University of Utah, 1950, 1955; Ph.D., Purdue University, 1971.
- Richard W. Hanks** Professor of Chemical Engineering (1963). B.E., Yale University, 1957; Ph.D., University of Utah, 1960; Registered Professional Engineer, Utah, 1968.
- Gary D. Hansen** Associate Professor of Family Economics and Home Management (1971). B.S., Utah State University, 1958; M.A., University of Minnesota, 1960; Ph.D., Oregon State University, 1969.
- Harold I. Hansen** Professor of Theatre and Cinematic Arts (1952). B.S., Utah State University, 1937; M.A., Ph.D., State University of Iowa, 1940, 1949.
- H. Kimball Hansen** Professor of Physics and Astronomy (1963). B.S., M.S., Brigham Young University, 1957, 1959; Ph.D., University of California at Berkeley, 1966.
- Lee D. Hansen** Associate Professor of Chemistry (1972). B.S., Ph.D., Brigham Young University, 1962, 1965.
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- Kenneth R. Hardy** Professor of Psychology (1954). B.A., M.A., University of Utah, 1948, 1949; Ph.D., University of Michigan, 1954.
- LeRoy Francis Harlow** Associate Professor of Public Administration (1967). B.S., Iowa State University, 1938; M.A., University of Minnesota, 1943.
- Frank W. Harmon** Professor of Elementary Education (1963). B.S., M.S., University of Utah, 1952, 1956; Ed.D., Columbia University, 1964.
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- Edward L. Hart** Professor of English (1952). B.S., University of Utah, 1939; M.A., University of Michigan, 1941; D. Phil., Oxford University (England), 1950.
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- Richard Allyn Heaps** Associate Professor of Educational Psychology; Associate Director, Personal Development Center (1970). B.S., Brigham Young University, 1966; M.A., Ph.D., University of Utah, 1968, 1970.
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- Richard Wilford Heninger** Professor of Zoology (1966). B.S., Brigham Young University, 1957; M.S., Ph.D., Oklahoma State University, 1959, 1961.
- Charles A. Henson** Associate Professor of Theatre and Cinematic Arts (1958). B.S., M.S., Brigham Young University, 1957, 1959.
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- Martin B. Hickman** Professor of Political Science; Dean, College of Social Sciences (1967). B.S., M.A., Ph.D., University of Utah, 1951, 1952, 1954; MPA, Harvard University, 1960.
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- Armin J. Hill** Professor of Physics; Dean, College of Engineering Sciences and Technology (1957). B.S., M.S., Montana State College, 1932, 1938; M.S., Ph.D., California Institute of Technology, 1949, 1950.
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- Max W. Hill** Professor of Physics (1958). B.A., Brigham Young University, 1954; Ph.D., University of California at Berkeley, 1959.
- Kenneth L. Hillam** Professor of Mathematics (1957). B.S., M.S., University of Utah, 1949, 1956; Ph.D., University of Colorado, 1962.
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- Ivin L. Holt** Associate Professor of Technology (1963). B.S., Brigham Young University, 1957; M. Ed., Pennsylvania State University, 1958; Ed.D., Arizona State University, 1972.
- Keith H. Hoopes** Professor of Animal Science (1957). B.S., Utah State University, 1957; DVM, State College of Washington, 1956.
- Margaret H. Hoopes** Associate Professor of Child Development and Family Relationships (1970). B.S., Ricks College, 1953; M.S., Brigham Young University, 1962; Ph.D., University of Minnesota, 1969.
- Russell N. Horiuchi** Associate Professor of Geography (1961). B.A., Brigham Young University, 1953; M.A., University of California, 1958; Ph.D., University of Washington, 1975.
- A. Burt Horsley** Professor of Church History and Doctrine (1956). B.A., M.A., Brigham Young University, 1945, 1954; Dd.P., Münster University, 1955; Ph.D., Westphalian Welhelms Universität, Münster, Germany, 1956.
- M. Duane Horton** Professor of Chemical Engineering (1963). B.S., Ph.D., University of Utah, 1957, 1961.
- Robert J. Howell** Professor of Psychology (1952). B.A., M.A., Ph.D., University of Utah, 1948, 1949, 1951.

- Ernest D. Hubbard** Associate Professor of Accounting (1963). B.S., Utah State University, 1952; MBA, University of Utah, 1959; DBA, University of Washington, 1967.
- Lloyd Eugene Hudman** Associate Professor of Geography (1970). B.S., University of Utah, 1964; M.S., Ph.D., University of Kansas, 1968, 1970.
- DeVrel S. Humpherys** Professor of Electrical Engineering (1964). B.S., Brigham Young University, 1955; M.S., University of Utah, 1957; Ph.D., University of Illinois, 1963.
- O. Glade Hunsaker** Assistant Professor of English (1964). B.S., Utah State University, 1962; M.A., Brigham Young University, 1964; Ph.D., University of Illinois, 1970.
- D. Richard Hurley** Associate Professor of Health Science (1971). B.S., M.S., Brigham Young University, 1963, 1964; Ph.D., Southern Illinois University, 1971.
- Norman F. Hyatt** Associate Professor of Educational Administration (1970). B.S., M.S., Brigham Young University, 1948, 1949; Ed.D., University of Oregon, 1964.
- Paul V. Hyer** Professor of History (1957). B.A., Brigham Young University, 1951; M.A., Ph.D., University of California, 1953, 1960.
- Carlton A. Infanger** Associate Professor of Agricultural Economics (1965). B.S., M.S., Ph.D., Montana State College, 1955, 1956, 1964.
- Reed McNeil Izatt** Professor of Chemistry (1956). B.S., Utah State University, 1951; Ph.D., Pennsylvania State University, 1954.
- James F. Jackson** Associate Professor of Chemical Engineering (1974). B.S., University of Utah, 1961; M.S., Massachusetts Institute of Technology, 1962; Ph.D., University of California at Los Angeles, 1969.
- Richard H. Jackson** Associate Professor of Geography (1969). B.S., M.S., Brigham Young University, 1965, 1966; Ph.D., Clark University, 1970.
- Thomas Wendell Jackson** Assistant Professor of Spanish and Portuguese (1968). B.A., Brigham Young University, 1956; Ph.D., Ohio State University, 1968.
- Brian S. Jacobs** Professor of English (1946). B.A., Brigham Young University, 1939; Ph.D., State University of Iowa, 1944.
- Phyllis C. Jacobson** Associate Professor of Physical Education for Women (1957). B.S., M.S., Utah State University, 1953, 1954; Ph.D., University of Utah, 1971.
- Sechin Jagchid** Professor of History and Asian Studies (1972). Equi., Peking University, 1937; Waseda University, 1939.
- Ronald D. Jamison** Professor of Mathematics (1963). B.S., Brigham Young University, 1957; Ph.D., University of Utah, 1965.
- Boyd O. Jarman** Professor of Physical Education (1969). B.S., Brigham Young University, 1954; M.S., Ed.D., University of Oregon, 1959, 1965.
- Donald Karl Jarvis** Assistant Professor of Russian (1970). B.A., Brigham Young University, 1964; Ph.D., Ohio State University, 1970.
- August W. Jaussi** Professor of Zoology (1962). B.S., University of Idaho, 1953; M.S., Brigham Young University, 1955; Ph.D., Oklahoma State University, 1960.
- Duane E. Jeffery** Assistant Professor of Zoology (1969). B.S., M.S., Utah State University, 1962, 1963; M.A., Ph.D., University of California at Berkeley, 1966, 1972.
- Terry Jenkins** Assistant Professor of Psychology; Counselor, Personal Development Center (1970). B.S., Brigham Young University, 1957; M.S., M.A., Southern Illinois University, 1958, 1959; Ph.D., University of Utah, 1966.
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- De Lamar Jensen** Professor of History (1957). B.A., Brigham Young University, 1952; M.A., Ph.D., Columbia University, 1953, 1957.
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- Gary L. Jensen** Associate Professor of Physics (1966). B.S., Utah State University, 1958; M.S., Ph.D., University of Michigan, 1960, 1964.
- Gordon Kay Jensen** Assistant Professor of Portuguese (1969). B.A., Brigham Young University, 1963; M.A., Ph.D., University of Wisconsin, 1966, 1975.
- Larry C. Jensen** Professor of Psychology (1965). B.S., M.S., Brigham Young University, 1960, 1961; Ph.D., Michigan State University, 1966.
- Marcus M. Jensen** Associate Professor of Microbiology (1969). B.S., M.S., Utah State University, 1952, 1954; Ph.D., University of California at Los Angeles, 1961.
- Vern H. Jensen** Professor of Educational Psychology; Counselor, Personal Development Center (1949). B.S., M.S., Brigham Young University, 1948, 1950; Ed.D., University of Colorado, 1957.
- Franz M. Johansen** Professor of Art (1956). B.A., M.A., Brigham Young University, 1955, 1960; Illinois Institute of Technology, California School of Arts and Crafts, Academie de la Grand Chaumiere.
- Eldred A. Johnson** Professor of Accounting (1955). B.A., M.A., Brigham Young University, 1949, 1950; CPA, State of California, 1952; Ph.D., University of Utah, 1968.
- F. Brent Johnson** Associate Professor of Microbiology (1972). B.S., M.S., Ph.D., Brigham Young University, 1966, 1967, 1970.
- H. Thayne Johnson** Associate Professor of Library and Information Science (1965). B.A., M.A., Brigham Young University, 1950, 1952; M.S., University of Southern California, 1959.
- John Hal Johnson** Associate Professor of Food Science and Nutrition (1969). B.S., M.S., Brigham Young University, 1955, 1957; Ph.D., Ohio State University, 1963.
- LaVon C. Johnson** Professor of Physical Education (1969). B.A., Brigham Young University, 1958; M.A., Ph.D., University of Utah, 1959, 1962.
- Lynn E. Johnson** Associate Professor of Psychology (1961). B.A., Brigham Young University, 1958; M.A., Ph.D., University of Utah, 1959, 1962.
- Richard W. Johnson** Associate Professor of Educational Psychology; Counselor, Personal Development Center (1968). A.S., Weber State College, 1959; B.S., Utah State University, 1960; M.S., University of Wisconsin, 1964; Ph.D., Brigham Young University, 1968.
- N. Paul Johnston** Associate Professor of Animal Science (1971). B.A., Brigham Young University, 1966; M.S., Ph.D., Oregon State University, 1967, 1971; MBA, University of Utah, 1969.
- Douglas E. Jones** Professor of Physics (1964). B.S., M.S., Ph.D., Brigham Young University, 1957, 1959, 1965.
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- Jens J. Jonsson** Professor of Electrical Engineering (1953). BSGE, BSEE, University of Utah, 1944, 1947; MSEE, Ph.D., Purdue University, 1948, 1951.
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- Percy G. Kalt** Associate Professor of Music (1966). B.S., M.M., University of Utah, 1957, 1968; DMA, University of Michigan, 1973.

- Kenneth W. Karren** Professor of Civil Engineering (1965). B.S., M.S., University of Utah, 1953, 1961; Ph.D., Cornell University, 1965; Registered Engineer, Utah, 1959.
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- Hans-Wilhelm Kelling** Professor of German (1962). Abitur, Germany, 1952; B.A., Brigham Young University, 1958; M.A., Ph.D., Stanford University, 1960, 1967.
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- Arthur Henry King** Professor of English (1971). B.A., M.A., Cambridge University, 1931, 1942; F.D., Lund University (Sweden), 1941.
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- Gordon M. Low** Professor of Educational Psychology (1964). B.S., M.S., University of Utah, 1949, 1950; Ph.D., University of Minnesota, 1955.
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- Lyman Sidney Shreeve, Sr.** Professor of Spanish (1965). B.A., M.A., Brigham Young University, 1949, 1950; Ph.D., Interamerican University, Mexico, 1970.
- Larry V. Shumway** Assistant Professor of Humanities, Japanese, and Musicology (1975). B.A., Brigham Young University, 1960; M.A., Seton Hall University, 1964; Ph.D., University of Washington, 1974.
- R. Phil Shumway** Professor of Animal Science (1949). B.S., Utah State University, 1947; M.S., University of Minnesota, 1949; Ph.D., Utah State University, 1959.
- R. Wayne Shute** Associate Professor of Secondary Education and Foundations (1960). B.S., M.Ed., Brigham Young University, 1955, 1959; Ed.D., University of Southern California, 1964.
- Val Eugene Simmons** Associate Professor of Technology (1960). B.S., University of Utah, 1964; M.S., Brigham Young University, 1967; Ph.D., Utah State University, 1970.
- John M. Simonsen** Professor of Mechanical Engineering (1954). BSME, University of Utah, 1950; MSME, Ph.D., Purdue University, 1952, 1955; Registered Professional Engineer, Utah, 1957.
- R. Vencil Skarda, Jr.** Associate Professor of Mathematics (1965). B.A., Pomona College, 1961; M.S., Ph.D., California Institute of Technology, 1964, 1965.
- Karl M. Skousen** Professor of Accounting (1958). B.S., M.S., Brigham Young University, 1944, 1957; CPA, Utah, 1957; Ph.D., Michigan State University, 1962.
- K. Fred Skousen** Associate Professor of Accounting (1970). B.S., Brigham Young University, 1965; MAS, Ph.D., University of Illinois, 1966, 1968; CPA, Utah, 1968.
- Robert H. Slover** Associate Professor of Political Science (1965). B.A., University of Oklahoma, 1935; M.A., Ph.D., Harvard University, 1948, 1950.

- Bruce N. Smith** Associate Professor of Botany (1974). B.S., M.S., University of Utah, 1959, 1962; Ph.D., University of Washington, 1964.
- Gary Richard Smith** Associate Professor of Business Education (1969). B.A., M.A., Idaho State University, 1954, 1959; Ed.D., University of Idaho, 1969.
- Harold T. Smith** Associate Professor of Business Education (1963). B.A., M.A., Colorado State College, 1958, 1959; Ed.D., Brigham Young University, 1967.
- Howard Duane Smith** Associate Professor of Zoology (1969). B.S., M.S., Brigham Young University, 1963, 1966; Ph.D., University of Illinois, 1969.
- Jay M. Smith, Jr.** Professor of Accounting (1971). B.S., M.S., Brigham Young University, 1953, 1960; Ph.D., Stanford University, 1965.
- Kay H. Smith** Professor of Psychology (1961). B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., Wayne State University, 1962.
- LaMont Wood Smith** Assistant Professor of Animal Science (1970). B.S., Brigham Young University, 1960; M.S., University of Wisconsin, 1962; Ph.D., West Virginia University, 1970.
- Marvin A. Smith** Professor of Chemistry (1966). B.S., Utah State University, 1961; M.S., Ph.D., University of Wisconsin, 1962, 1964.
- Murray F. Smith** Professor of German (1962). B.A., University of Utah, 1956; M.A., Ph.D., University of Southern California, 1961, 1967.
- Nathan M. Smith** Assistant Professor of Library and Information Sciences (1967). B.S., Eastern Oregon College, 1961; M.S., Oregon State College, 1965; M.L.S., Ph.D., Brigham Young University, 1969, 1972.
- Oliver R. Smith** Professor of Communications (1938). B.A., Brigham Young University, 1938; Ph.D., State University of Iowa, 1951.
- Ralph B. Smith** Professor of Educational Administration (1963). B.S., Brigham Young University, 1943; M.A., University of Southern California, 1947; Ed.D., Brigham Young University, 1962.
- Robert J. Smith** Professor of Accounting; Associate Academic Vice-President (1949). B.S., Brigham Young University, 1948; MBA, Northwestern University, 1949; CPA, Illinois, 1949; CPA, Utah, 1950; DBA, Indiana University, 1957.
- Wilford E. Smith** Professor of Sociology (1948). B.A., University of Utah, 1943; M.A., Brigham Young University, 1948; Ph.D., University of Washington, 1952.
- L. Douglas Smoot** Professor of Chemical Engineering (1967). B.S., BES, Brigham Young University, 1957; M.S., Ph.D., University of Washington, 1958, 1960; Registered Professional Engineer, Utah, 1963.
- Donald Ray Snow** Professor of Mathematics (1969). B.A., BSME, University of Utah, 1959; MSME, M.S., Ph.D., Stanford University, 1960, 1962, 1965.
- Glenn Gardner Snow** Associate Professor of Educational Psychology (1969). B.S., M.Ed., Brigham Young University, 1950, 1959; Ph.D., Michigan State University, 1969.
- Karl Nelson Snow, Jr.** Associate Professor of Public Administration (1963). B.S., Brigham Young University, 1956; M.A., University of Minnesota, 1958; MPA, DPA, University of Southern California, 1965, 1972.
- Richard L. Snow** Professor of Chemistry (1957). B.S., Ph.D., University of Utah, 1953, 1957.
- Steven P. Sondrup** Assistant Professor of Humanities and Comparative Literature (1973). B.A., University of Utah, 1968; M.A., Ph.D., Harvard University, 1969, 1974.
- A. Don Sorenson** Associate Professor of Political Science (1970). B.S., Utah State University, 1960; M.A., Ph.D., University of Illinois, 1962, 1965.
- David M. Sorenson** Associate Professor of Psychology; Director, Personal Development Center; Assistant Dean of Students for Health and Counseling (1969). B.A., Brigham Young University, 1961; Ed.M., Ed.D., Harvard University, 1962, 1970.
- John Leon Sorenson** Professor of Anthropology and Sociology (1971). B.S., M.A., Brigham Young University, 1951, 1952; M.S., California Institute of Technology, 1952; Ph.D., University of California at Los Angeles, 1961.
- Walter H. Speidel** Professor of German (1963). Abitur, Germany, 1940; State Examination, Germany, 1948; M.A., University of Utah, 1960; Ph.D., University of Kansas, 1963.
- Berkley A. Spencer** Associate Professor of Sociology (1969). B.A., M.A., Brigham Young University, 1960, 1962; Ph.D., Cornell University, 1967.
- Robert W. Spencer** Associate Professor of Special Education; Dean of Admissions and Records (1970). B.S., M.S., Utah State University, 1963, 1964; Ed.D., Brigham Young University, 1971.
- Robert F. Stahmann** Professor of Child Development and Family Relationships (1975). B.A., Macalester College, 1963; M.S., Ph.D., University of Utah, 1965, 1967.
- John Stephen Staley** Professor of Sociology (1969). B.A., M.A., St. Vincent College, 1938, 1939; M.A., Catholic University of America, 1950; Ph.D., University of Pittsburgh, 1960.
- Melvin J. Stanford** Professor of Business Management; Director of Management Development Programs (1968). B.S., Utah State University, 1957; MBA, Harvard University, 1963; Ph.D., University of Illinois, 1968.
- Eric G. Stephan** Associate Professor of Speech (1968). B.A., Brigham Young University, 1961; M.A., Indiana University, 1963; Ph.D., University of California at Los Angeles, 1969.
- Kent Gordon Stephens** Associate Professor of Educational Administration (1972). B.S., Brigham Young University, 1960; M.Ed., Midwestern University, 1963; Ph.D., University of Washington, 1972.
- Dale John Stevens** Associate Professor of Geography (1966). B.A., Brigham Young University, 1961; M.A., Indiana University, 1963; Ph.D., University of California at Los Angeles, 1969.
- D. Michael Stewart** Instructor in History (1970). B.A., M.A., University of Utah, 1965, 1968; Ph.D., Wayne State University, 1974.
- David V. Stimpson** Professor of Psychology (1964). B.S., M.S., Brigham Young University, 1959, 1960; Ph.D., University of California at Berkeley, 1964.
- Ted D. Stoddard** Associate Professor of Business Education (1969). B.S., M.S., Brigham Young University, 1962, 1963; Ed.D., Arizona State University, 1967.
- W. Douglas Stout** Associate Professor of Art (1969). B.A., University of Utah, 1959; M.S., Illinois Institute of Technology, 1961.
- William J. Strong** Associate Professor of Physics (1967). B.S., M.S., Brigham Young University, 1958, 1959; Ph.D., Massachusetts Institute of Technology, 1964.
- Darrell W. Stubbs** Associate Professor of Music (1962). B.Mus., Eastman School of Music, 1949; M.M., Indiana University, 1952; DMA, University of Southern California, 1966.
- Howard C. Stutz** Professor of Botany (1953). B.S., M.S., Brigham Young University, 1940, 1951; Ph.D., University of California at Berkeley, 1956.
- Floyd Sucher** Professor of Elementary Education (1964). B.S., Brigham Young University, 1954; M.A., Los Angeles State College, 1957; Ed.D., Colorado State College, 1963.
- Albert D. Swensen** Professor of Chemistry (1947). B.A., M.A., Brigham Young University, 1937, 1938; Ph.D., Louisiana State University, 1941.
- Charles D. Tate, Jr.** Professor of English (1960). B.S., M.S., Utah State University, 1954, 1958; Ph.D., University of Colorado, 1966.

- George S. Tate** Assistant Professor of Humanities and Comparative Literature (1974). B.A., M.A., Brigham Young University, 1969, 1970; Ph.D., Cornell University, 1974.
- Barbara Taylor** Associate Professor of Child Development and Family Relationships (1957). B.S., M.S., Ph.D., Brigham Young University, 1957, 1960, 1971.
- Dale H. Taylor** Professor of Accounting (1963). B.A., M.A., Brigham Young University, 1951, 1953; CPA, Illinois, 1955; Ph.D., Northwestern University, 1963.
- James S. Taylor** Professor of Spanish (1962). B.A., M.A., Brigham Young University, 1957, 1960; Ph.D., Ohio State University, 1967.
- Stanley A. Taylor** Associate Professor of Political Science (1968). B.S., Brigham Young University, 1959; MALD, Ph.D., Fletcher School of Law and Diplomacy, 1961, 1968.
- Douglas H. Thayer** Associate Professor of English (1957). B.A., Brigham Young University, 1955; M.A., Stanford University, 1959; MFA, State University of Iowa, 1962.
- Darwin L. Thomas** Associate Professor of Child Development and Family Relationships (1972). B.A., M.A., Brigham Young University, 1962, 1964; Ph.D., University of Minnesota, 1968.
- Glen E. Thomas** Associate Professor of Educational Psychology (1968). B.S., M.Ed., University of Idaho, 1954, 1957; Ed.D., Colorado State College, 1968.
- John A. Thomas** Associate Professor of English (1962). B.A., M.A., Brigham Young University, 1953, 1954; Ph.D., University of Maryland, 1962.
- Robert K. Thomas** Professor of English; Academic Vice-President (1951). B.A., Reed College, 1947; M.A., University of Oregon, 1949; Ph.D., Columbia University, 1967.
- Paul H. Thompson** Associate Professor of Organizational Behavior (1973). B.S., University of Utah, 1964; MBA, DBA, Harvard University, 1966, 1969.
- Lowell D. Thomson** Associate Professor of Secondary Education and Foundations (1958) A.B., Humboldt State College, 1952; M.S.Ed., Ph.D., University of Utah, 1958, 1974.
- Woodruff C. Thomson** Professor of English (1950). B.A., M.A., Ph.D., University of Utah, 1938, 1949, 1962.
- Dennis Eugene Thorne** Associate Professor of Psychology (1966). B.S., Brigham Young University, 1962; M.A., Ph.D., University of Utah, 1965, 1966.
- James M. Thorne** Associate Professor of Chemistry (1966). B.S., Utah State University, 1961; Ph.D., University of California at Berkeley, 1966.
- Malcolm R. Thorp** Assistant Professor of History (1969). B.S., M.A., Brigham Young University, 1964, 1967; Ph.D., University of Wisconsin, 1972.
- Clark T. Thorstenson** Associate Professor of Recreation Education (1969). B.S., M.R.Ed., Brigham Young University, 1962, 1965; Ph.D., University of Utah, 1969.
- Alton L. Thygeson** Associate Professor of Health Science (1967). B.S., M.H.Ed., Ed.D., Brigham Young University, 1962, 1965, 1969.
- William D. Tidwell** Professor of Botany (1966). B.S., M.S., Brigham Young University, 1954, 1963; Ph.D., Michigan State University, 1966.
- William M. Timmins** Associate Professor of Political Science (1974). B.S., University of Utah, 1960; M.A., Harvard University, 1962; Ph.D., University of Utah, 1972.
- Frank M. Tippets** Associate Professor of Art (1958). B.A., M.A., Brigham Young University, 1953, 1962; Ed.D., Arizona State University, 1968.
- Vernon John Tipton** Professor of Zoology (1968). B.S., M.S., Brigham Young University, 1948, 1949; Ph.D., University of California at Berkeley, 1959.
- Douglas F. Tobler** Associate Professor of History (1967). B.A., M.A., Brigham Young University, 1961, 1962; Ph.D., University of Kansas, 1967.
- Lawrence Kirk Tolman** Assistant Professor of Mathematics (1965). B.S., M.S., Brigham Young University, 1960, 1961; Ph.D., University of New Mexico, 1972.
- Marvin N. Tolman** Assistant Professor of Elementary Education (1975). B.S., Utah State University, 1964; M.E., University of Utah, 1969; Ed.D., Utah State University, 1975.
- F. LaMond Tullis** Associate Professor of Political Science (1969). B.A., M.A., Brigham Young University, 1961, 1964; MPA, Ph.D., Harvard University, 1965, 1969.
- Glen H. Turner** Professor of Art (1947). B.S., M.A., Brigham Young University, 1940, 1948.
- Norman C. Turner** Professor of French and Italian (1970). B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., Syracuse University, 1962.
- Rodney Turner** Professor of Church History and Doctrine (1956). B.A., M.A., Brigham Young University, 1949, 1953; Ed.D., University of Southern California, 1960.
- Richard D. Ulrich** Professor of Mechanical Engineering (1968). B.S., M.S., Ph.D., Purdue University, 1954, 1955, 1959.
- Arthur E. Unsworth** Assistant Professor of Music (1973). B.S., M.A., Trenton State College, 1959, 1961; Ed.D., Arizona State University, 1970.
- John Franklin Vallentine** Professor of Range Science (1968). B.S., Kansas State University, 1952; M.S., Utah State University, 1953; Ph.D., Texas A&M University, 1959.
- Curtis N. Van Alfen** Associate Professor of Education; Dean, College of Education (1967). B.S., M.S., Utah State University, 1957, 1959; Ed.D., University of Utah, 1967.
- Jennie Van Drimmelen** Professor of Nursing (1971). R.N., Thomas D. Dee Hospital, 1941; B.S., M.S., Ph.D., University of Utah, 1961, 1963, 1971.
- Howard B. Vanfleet** Professor of Physics (1960). B.S., Brigham Young University, 1955; Ph.D., University of Utah, 1961.
- Adrian Van Mondfrans** Professor of Educational Psychology (1971). B.S., M.A., University of Utah, 1963, 1964; Ph.D., University of Wisconsin, 1967.
- Leo P. Vernon** Professor of Chemistry; Assistant Academic Vice President—Research (1970). B.A., Brigham Young University, 1948; Ph.D., Iowa State University, 1951.
- Vern J. Wade** Assistant Professor of Elementary Education (1971). B.S., Brigham Young University, 1962; M.A., Ed.D., University of Northern Colorado, 1969, 1971.
- Rex A. Wadham** Assistant Professor of Educational Psychology (1963). B.S., Brigham Young University, 1963; M.A., University of Utah, 1967; M.S., Brigham Young University, 1967; Ph.D., University of Utah, 1972.
- Ruth Merrill Walker** Assistant Professor of Food Science and Nutrition (1972). B.Sc., University of Alberta, 1941; M.S., Washington State University, 1943; Ph.D., University of Wisconsin, 1972.
- Steven C. Walker** Assistant Professor of English (1966). B.S., M.A., Brigham Young University, 1965, 1966; Ph.D., Harvard University, 1973.
- Max V. Wallentine** Professor of Animal Science; Assistant Dean, College of Biological and Agricultural Sciences (1962). B.S., Utah State University, 1955; M.S., Ph.D., Cornell University, 1956, 1960.
- Charles N. Walter** Assistant Professor of Mathematics (1969). B.S., M.A., Ph.D., University of New Mexico, 1963, 1965, 1969.
- Wilbur T. Walton** Associate Professor of Educational Psychology (1971). B.A., Brigham Young University, 1957; M.S., Ph.D., University of Utah, 1965, 1969.

- C. Terry Warner** Associate Professor of Philosophy; Dean, College of General Studies (1967). B.A., Brigham Young University, 1963; M.A., Ph.D., Yale University, 1965, 1967.
- Charles Young Warner** Professor of Mechanical Engineering (1966). BES, M.S., Brigham Young University, 1957, 1963; Ph.D., University of Michigan, 1966; Registered Professional Engineer, Utah, 1967.
- Ted J. Warner** Professor of History (1962). B.S., M.S., Brigham Young University, 1955, 1958; Ph.D., University of New Mexico, 1964.
- W. Keith Warner** Professor of Sociology (1971). B.S., M.S., Utah State University, 1958, 1959; Ph.D., Cornell University, 1960.
- F. Delmar Wasden** Associate Professor of Educational Administration (1971). B.S., M.Ed., Ed.D., Brigham Young University, 1961, 1966, 1971.
- Max L. Waters** Professor of Business Education (1958). B.A., M.Ed., Brigham Young University, 1958, 1960; Ed.D., Colorado State College, 1963.
- Jean Anne Waterstradt** Associate Professor of English (1945). B.A., Brigham Young University, 1945; M.A., University of Southern California, 1955.
- Arthur R. Watkins** Professor of German (1952). B.A., M.A., Brigham Young University, 1941, 1942; Ph.D., Stanford University, 1948.
- Ray Watters** Professor of Health Science (1957). B.S., M.S., Utah State University, 1948, 1950; HSD, Indiana University, 1960.
- Stanley H. Watts** Associate Professor of Physical Education; Director of Athletics (1947). B.S., Brigham Young University, 1938.
- Max D. Weaver** Professor of Art (1961). B.S., M.A., Utah State University, 1939, 1955.
- Ross Maughan Weaver** Associate Professor of Educational Psychology (1959). B.S., M.S., Utah State University, 1950, 1951; Ph.D., University of Oklahoma, 1970.
- Clark D. Webb** Assistant Professor of Secondary Education and Foundations (1966). B.A., M.A., Brigham Young University, 1962, 1966; Ph.D., University of Texas at Austin, 1970.
- Darrell Jack Weber** Professor of Botany (1969). B.S., M.S., University of Idaho, 1958, 1959; Ph.D., University of California at Davis, 1963.
- David G. Weight** Associate Professor of Psychology (1969). B.A., M.S., Brigham Young University, 1963, 1965; Ph.D., University of Washington, 1969.
- M. Gawain Wells** Assistant Professor of Psychology (1972). A.Sc., Dixie Junior College, 1964; B.S., M.S., Brigham Young University, 1967, 1968; Ph.D., Purdue University, 1972.
- Stanley L. Welsh** Professor of Botany (1960). B.S., M.S., Brigham Young University, 1951, 1957; Ph.D., Iowa State University, 1960.
- Dale H. West** Professor of English (1947). B.A., Brigham Young University, 1940; M.A., University of Southern California, 1955; Ed.D., University of Colorado, 1962.
- Clayton M. White** Associate Professor of Zoology (1970). B.A., Ph.D., University of Utah, 1961, 1968.
- Fred G. White** Professor of Chemistry (1961). B.S., M.S., Brigham Young University, 1952, 1956; Ph.D., University of California, 1961.
- Armand T. Whitehead** Assistant Professor of Zoology (1969). B.S., Brigham Young University, 1965; Ph.D., University of California at Berkeley, 1969.
- Gordon C. Whiting** Associate Professor of Communications (1974). B.A., University of Minnesota, 1959; M.A., University of Utah, 1961; Ph.D., Michigan State University, 1967.
- Charles W. Whitman** Associate Professor of Theatre and Cinematic Arts (1965). B.A., M.A., Brigham Young University, 1957, 1958; Ph.D., University of Minnesota, 1966.
- Leslie Whitton** Associate Professor of Botany (1962). B.S., Utah State University, 1949; M.S., University of California at Davis, 1953; Ph.D., Cornell University, 1964.
- Harry E. Wickes** Professor of Mathematics (1957). B.S., M.Ed., Brigham Young University, 1950, 1954; M.Ed., Harvard University, 1962; Ed.D., Colorado State College, 1967.
- Marjorie Wight** Assistant Professor of English (1963). B.A., Brigham Young University, 1943; M.A., University of California at Los Angeles, 1958; Ph.D., University of Southern California, 1967.
- Theodore A. Wight** Associate Professor of Mathematics (1963). B.S., M.S., Ed.D., University of Utah, 1955, 1964, 1969.
- Ray T. Wilcox** Associate Professor of Secondary Education and Foundations (1957). B.S., M.Ed., Brigham Young University, 1951, 1954; Ed.D., University of California at Berkeley, 1957.
- Doran F. Wilkes** Professor of Civil Engineering (1967). B.S., M.S., Utah State University, 1951, 1955; Ed.D., University of Missouri, 1966.
- Milton G. Wille** Professor of Mechanical Engineering (1964). B.A., BES, Brigham Young University, 1957, MSME, California Institute of Technology, 1958; Ph.D., University of Michigan, 1964; Registered Professional Engineer, Utah, 1965.
- C. Frank Williams** Assistant Professor of Agronomy and Horticulture (1970). B.S., M.S., Utah State University, 1967, 1968; Ph.D., Oregon State University, 1971.
- David K. Williams** Associate Professor of Educational Psychology (1974). B.S., M.S., Brigham Young University, 1964; Ph.D., University of Missouri-Columbia, 1973.
- Gary Shelton Williams** Assistant Professor of Asian Languages (1966). B.A., Brigham Young University, 1962; Ph.D., University of Washington, 1973.
- Glenn R. Williams** Professor of Music (1965). B.A., Brigham Young University, 1953; M.M., DMA, Eastman School of Music, 1954, 1961.
- Ray S. Williams** Associate Professor of English (1966). A.B., Coker College, 1960; M.A., Ph.D., Florida State University, 1962, 1965.
- Arnold Wilson** Associate Professor of Civil Engineering (1957). B.S., M.S., Brigham Young University, 1957, 1962; Registered Professional Engineer, Utah, 1963.
- Byron J. Wilson** Professor of Chemistry (1965). B.S., Idaho State College, 1955; M.A., Southern Illinois University, 1958; Ph.D., University of Washington, 1961.
- Grant M. Wilson** Associate Professor of Chemical Engineering (1972). B.S., Brigham Young University, 1953; Ph.D., Massachusetts Institute of Technology, 1958.
- Warren B. Wilson** Professor of Art and Education (1954). B.S., Utah State University, 1943; MFA, State University of Iowa, 1949.
- William A. Wilson** Associate Professor of English (1960). B.A., M.A., Brigham Young University, 1958, 1962; Ph.D., Indiana University, 1974.
- Larry T. Wimmer** Associate Professor of Economics (1963). B.S., Brigham Young University, 1960; M.A., Ph.D., University of Chicago, 1962, 1968.
- H. Geneva Winterrose** Associate Professor of Elementary Education (1967). B.S., M.S., Brigham Young University, 1948, 1951; Ed.D., Utah State University, 1968.
- Edward J. Winward** Associate Professor of Educational Psychology; Counselor, Personal Development Center (1959). B.S., M.S., Utah State University, 1959, 1960; Ph.D., University of Missouri, 1966.

- Harold F. Wolfram** Professor of Elementary Education (1966). B.S., M.S., Ph.D., University of Utah, 1959, 1960, 1964.
- Benjamin W. Wood** Assistant Professor of Botany (1971). B.S., M.S., Brigham Young University, 1963, 1967; Ph.D., Oregon State University, 1971.
- Camilla S. Wood** Professor of Nursing (1973). B.S., M.S., Ph.D., University of Utah, 1947, 1960, 1972.
- Glena D. Wood** Professor of English (1952). B.A., Brigham Young University, 1936; M.A., Ph.D., University of Kentucky, 1949, 1958.
- Joseph S. Wood** Associate Professor of History (1967). B.S., Ph.D., University of Utah, 1939, 1967.
- Lowell D. Wood** Associate Professor of Agricultural Economics and Economics (1969). B.S., Brigham Young University, 1961; M.S., Montana State University, 1966; Ph.D., University of California at Berkeley, 1969.
- Stephen L. Wood** Professor of Zoology (1956). B.S., M.S., Utah State University, 1946, 1948; Ph.D., University of Kansas, 1953.
- Lael J. Woodbury** Professor of Theatre and Cinematic Arts; Dean, College of Fine Arts and Communications (1965). B.S., Utah State University, 1952; M.A., Brigham Young University, 1953; Ph.D., University of Illinois, 1954.
- Richard C. Woodbury** Professor of Electrical Engineering (1959). B.S., University of Utah, 1956; M.S., Ph.D., Stanford University, 1958, 1965.
- Leon W. Woodfield** Professor of Accounting (1960). B.S., MBA, University of Utah, 1956, 1957; CPA, California, 1959, Utah, 1960; DBA, Michigan State University, 1965.
- Hugh James Woodford** Associate Professor of Physics (1968). Diploma, Public Administration, University of Sidney, Australia, 1948; B.S., M.S., Brigham Young University, 1952, 1955; Ph.D., University of Utah, 1966.
- Ralph Woodward** Professor of Music (1955). B.A., University of Idaho, 1937; M.M., Cincinnati Conservatory of Music, 1948; DMA, University of Illinois, 1964.
- Earl M. Woolley** Associate Professor of Chemistry (1970). B.S., Ph.D., Brigham Young University, 1966, 1969.
- Richard R. Wootton** Associate Professor of Educational Psychology (1961). B.S., M.S., Brigham Young University, 1956, 1961; Ed.D., Utah State University, 1969.
- Donald N. Wright** Professor of Microbiology (1969). B.S., University of Utah, 1958; Ph.D., Iowa State University, 1964.
- H. Curtis Wright** Associate Professor of Library and Information Sciences (1969). B.A., M.A., Brigham Young University, 1954, 1955; M.A., University of Southern California, 1959; M.S., Ph.D., Case Western Reserve University, 1968, 1969.
- N. Dale Wright** Assistant Professor of Public Administration (1968). B.S., M.S., Brigham Young University, 1964, 1966; Ph.D., University of Southern California, 1972.
- Jan E. Wynn** Assistant Professor of Mathematics (1966). B.S., University of Idaho, 1962; M.S., Utah State University, 1965; Ph.D., Colorado State University, 1972.
- David H. Yarn, Jr.** Professor of Philosophy (1950). B.A., Brigham Young University, 1946; M.A., Ed.D., Columbia University, 1949, 1958.
- Paul H. Yearout** Professor of Mathematics. (1962). B.A., Reed College, 1949; M.S., Ph.D., University of Washington, 1958, 1961.
- James Robert Young** Associate Professor of Elementary Education (1971). B.A., M.Ed., Brigham Young University, 1965, 1966; Ph.D., George Peabody College, 1970.

On authorization by the Graduate Council the service of members of the graduate faculty will be supplemented by that of other members of the University faculty whose advanced training and effective academic work in highly specialized fields qualify them for service in the graduate program.

General Information

History and Purpose

Brigham Young University was founded as an academy of The Church of Jesus Christ of Latter-day Saints in 1875. It became a university in 1903. The first graduate program began in 1916; the first master's degree was awarded in 1919. Some doctoral programs were inaugurated in 1957, with the first doctorates awarded in 1961.

The purpose of the Graduate School is to promote quality programs for academic and professional education as a means of meliorating the conditions of human life. Acute intellectual ability coupled with deep moral and spiritual commitment is seen as the ideal.

Organization

The Graduate Dean

The dean is responsible for leadership and administration of the entire Graduate School. The Office of the Graduate Dean has as its principal function the processing and maintenance of student records, while assuring high quality in individual student programs.

The Graduate Council

This council is composed of members elected from the graduate academic areas of the University and is presided over by the graduate dean. This body recommends policy for the Graduate School as a whole, processes all proposals for new degree programs, and conducts a continuous review of existing programs.

College Deans, Department Chairmen, and Graduate Coordinators

These individuals implement graduate programs under approved policies and serve a critical quality-control function relative to individual student programs.

The Graduate Faculty

Specially qualified members of the University faculty constitute the graduate faculty. Close professional and personal association of students with graduate faculty in learning, research, and teaching experiences helps provide students with the knowledge, skills, and judgment of a highly competent professional person.

Graduate Student Council Committee

Student representatives from the graduate academic areas are members of this committee. They consult on procedures for upgrading the Graduate School and conduct schoolwide academic and social functions.

Law School

For information regarding programs in law, write directly to Law School Admissions, 340 JRCB, Brigham Young University, Provo, Utah 84602.

Graduate School of Management

The Graduate School of Management offers degrees in the following graduate professional programs:

Master of Business Administration
Master of Public Administration
Master of Accountancy
M.A.—Organizational Behavior

Information regarding these programs, admission standards, and related matters may be obtained from the Graduate School of Management Bulletin, which is available through the office of the Dean of the Graduate School of Management, 154 JKB, Brigham Young University, Provo, Utah 84602.

To be admitted to the Graduate School of Management, the applicant must meet the high academic and admission standards established by each of the programs. In addition, an applicant must meet the general requirements for admission to the University, including the personal standards required of all students.

Application for admission must be made on forms provided by the Graduate School of Management. A flexible admission policy is used, and qualified applicants will be accepted as long as places are available. Applicant date guidelines are as follows:

Date of Application

December 15
February 15
April 15
June 15

Applicant will be notified at least by

January 15
March 15
May 15
July 15

Graduate Degrees

The Graduate School offers the master's degree in 142 fields distributed through forty-six graduate departments and the doctor's degree in more than seventy-one fields distributed through twenty-two graduate departments as follows:

Doctor of Philosophy

Botany and Range Science
Botany
Genetics

Chemistry

Analytical-Physical Chemistry
Biochemistry
Inorganic Chemistry
Organic Chemistry
Physical Chemistry

Child Development and Family Relationships
Child Development and Family Relationships

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 - Mechanical Engineering Science
- English
 - American Literature
 - English Literature
- French and Italian
 - French Literature
 - French Teaching
- Geology
 - Economic Geology
 - Mineralogy, Geochemistry, and Petrology
 - Paleontology
 - Stratigraphy and Sedimentation
 - Structural and Field Geology
- Germanic Language
 - German Language
 - German Literature
 - German Teaching
- History
 - American History
 - Ancient History
 - History of Asia
 - Latin American History
 - Medieval History
 - Modern European History
- Instructional Science
 - Instructional Psychology (interdepartmental with psychology)
 - Instructional Science and Technology
- Microbiology
 - Genetics
 - Microbiology
- Music
 - Music
- Physics and Astronomy
 - Acoustics
 - Astrophysics
 - Atomic Physics and Spectroscopy
 - Biophysics
 - Nuclear Physics
 - Planetary and Space Physics
 - Plasma Physics
 - Solid-State Physics
 - Theoretical Physics
- Psychology
 - Clinical Psychology
 - Experimental Psychology
 - Instructional Psychology (interdepartmental)
 - Social Psychology
- Sociology
 - Family Sociology
 - Family Studies
 - Social Organization
 - Social Psychology
- Spanish and Portuguese
 - Spanish Language
 - Spanish Literature
 - Spanish Teaching
- Theatre and Cinematic Arts
 - Theatre and Cinematic Arts
- Zoology
 - Entomology
 - Genetics
 - Zoology
- Doctor of Education**
- Business Education
 - Business Education
- Educational Administration
 - Community College Administration
 - Community School Administration
 - Public School Administration
- Educational Psychology
 - Counseling and Guidance
 - Educational Psychology
 - Special Education
- Elementary Education
 - Elementary Curriculum and Instruction
- Instructional Science
 - Instructional Design and Production
 - Instructional Evaluation
 - Instructional Systems Management
- Physical Education
 - Analysis of Human Motions
 - Professional Leadership
- Secondary Education and Foundations
 - Secondary Curriculum and Instruction
- Educational Specialist**
 - Educational Administration
 - Community School Administration
 - Public School Administration
 - Supervision in Educational Administration
 - Educational Psychology
 - Counseling and Guidance
 - Special Education
 - Elementary Education
 - Elementary Curriculum and Instruction
 - Reading Specialist
 - Instructional Science
 - Instructional Design and Production
 - Instructional Systems Management
 - Secondary Education and Foundations
 - Secondary Curriculum and Instruction
- Master of Arts**
 - Anthropology and Archaeology
 - Historic Archaeology
 - Prehistoric Archaeology
 - Art
 - Design
 - Painting and Sculpture
 - Asian Studies
 - Asian Studies
 - Chemistry
 - Chemistry Teaching
 - Classical, Biblical, and Middle Eastern Languages
 - Classics
 - Communications
 - Communications
 - Educational Psychology
 - Clinical Audiology
 - Communicative Disorders
 - Counseling and Guidance
 - Educational Psychology
 - School Psychology (interdepartmental)
 - Special Education
 - Elementary Education
 - Elementary Curriculum and Instruction
 - Reading Specialist
 - English
 - American Literature
 - English Language
 - English Literature
 - French and Italian
 - French Literature
 - French Teaching
 - Geology
 - Earth Science Teaching
 - Germanic Languages
 - German Language
 - German Literature
 - German Teaching

- History
 - American History
 - Ancient History
 - History of Asia
 - Modern European History
 - Latin American History
 - Medieval History
 - History Teaching
- Humanities and Comparative Literature
 - Comparative Literature
 - Humanities
- Instructional Science
 - Instructional Psychology (interdepartmental with psychology)
- Latin American Studies
 - Latin American Studies
- Linguistics
 - Applied Linguistics
 - Teaching English as a Second Language (TESL)
 - Theoretical Linguistics
- Mathematics
 - Mathematics
 - Mathematics Education
- Music
 - Music Education
 - Musicology
 - Music Theory/Composition
- Physical Education
 - Dance
 - Professional Leadership
- Physics and Astronomy
 - Physics Teaching
- Political Science
 - Political Science
- Recreation Education
 - Community School Leadership
 - Municipal Recreation Administration
 - Outdoor Recreation
 - Therapeutic Recreation
- Spanish and Portuguese
 - Portuguese Language
 - Portuguese Literature
 - Spanish Language
 - Spanish Literature
 - Spanish Teaching
- Theatre and Cinematic Arts
 - Theatre and Cinematic Arts
- Master of Science**
- Agriculture
 - Agribusiness
 - Agronomy
 - Animal Science
 - Horticulture
- Botany and Range Science
 - Biological Science Education
 - Botany
 - Genetics
 - Range Science
- Business Education
 - Business Education
- Chemical Engineering Science
 - Combustion
 - Environmental Control
 - Fluid Mechanics
 - Nuclear Engineering
 - Thermodynamics
- Chemistry
 - Analytical-Physical Chemistry
 - Biochemistry
 - Inorganic Chemistry
 - Organic Chemistry
 - Physical Chemistry
- Child Development and Family Relationships
 - Child Development
 - Family Relationships
 - Marriage and Family Counseling
- Civil Engineering Science
 - Geotechnical Engineering
 - Structures and Structural Mechanics
 - Transportation Engineering
 - Water Resources and Environmental Engineering
- Computer Science
 - Computer Science
- Economics
 - Economics
- Electrical Engineering Science
 - Communications Engineering
 - Computer Engineering
 - Electrical Power Engineering
 - Solid-State Electronics
- Food Science and Nutrition
 - Food Science and Nutrition
- Geography
 - Cartography
 - Geography
 - Urban and Regional Planning
- Geology
 - Economic Geology
 - Mineralogy, Geochemistry, and Petrology
 - Paleontology
 - Stratigraphy and Sedimentation
 - Structural and Field Geology
- Health Sciences
 - Community Health
 - Health Education (with emphasis in school health)
 - Safety Education
- Home Economics Education
 - Home Economics Education
- Industrial Education
 - Industrial Arts Education
 - Technical Education
 - Technology
- Mathematics
 - Mathematics
- Mechanical Engineering Science
 - Applied Mechanics
 - Machine Design
 - Manufacturing Engineering
 - Nuclear Engineering
 - Thermosciences
- Microbiology
 - Genetics
 - Medical Technology
 - Microbiology
- Physical Education
 - Analysis of Human Motions
 - Professional Leadership
- Physics and Astronomy
 - Acoustics
 - Astrophysics
 - Atomic Physics and Spectroscopy
 - Biophysics
 - Nuclear Physics
 - Planetary and Space Physics
 - Plasma Physics
 - Solid-State Physics
 - Theoretical Physics
- Psychology
 - School Psychology (interdepartmental)
- Sociology
 - Sociology
- Statistics
 - Applied Statistics
 - Theoretical Statistics
- Zoology
 - Biological Science Education
 - Entomology
 - Genetics
 - Zoology
- Master of Communicative Disorders**
- Educational Psychology
 - Communicative Disorders

Master of Education**Educational Administration**

- Community School Administration
- Elementary School Administration
- Secondary School Administration

Educational Psychology

- Counseling and Guidance
- Educational Psychology
- School Psychology (interdepartmental)
- Special Education

Elementary Education

- Elementary Curriculum and Instruction
- Reading Specialist

Instructional Science

- Instructional Media
- Instructional Science and Technology

Secondary Education and Foundations

- Comparative and International Education
- Secondary Curriculum and Instruction

Master of Fine Arts**Art and Design**

- Design
- Painting and Sculpture

Master of Engineering**Chemical Engineering Science**

- Combustion
- Environmental Control
- Fluid Mechanics
- Nuclear Engineering
- Thermodynamics

Civil Engineering Science

- Geotechnical Engineering
- Structures and Structural Mechanics
- Transportation Engineering
- Water Resources and Environmental Engineering

Electrical Engineering Science

- Communications Engineering
- Computer Engineering
- Electrical Power Engineering
- Solid-State Electronics

Mechanical Engineering Science

- Applied Mechanics
- Machine Design
- Manufacturing Engineering
- Nuclear Engineering
- Thermosciences

Master of Health Education**Health Sciences**

- Community Health
- Health Education (with emphasis in school health)
- Safety Education

Master of Industrial Education**Industrial Education****Master of Library Science**

- School of Library and Information Sciences
- Library Science

Master of Music**Music**

- Music Performance

Master of Nursing**Nursing**

- Clinical Specialization in
 - Cardiovascular Nursing
 - Family Nursing
 - Neurological Nursing
 - Oncological Nursing

Master of Recreation Education**Recreation Education**

- Community School Leadership
- Municipal Recreation Administration

Outdoor Recreation**Therapeutic Recreation**

Minors are offered in the fields listed above in addition to the following fields:

- Ancient Scripture
- Art History
- Chemistry
- Church History and Doctrine
- Philosophy

Certificate Program

- Teaching English as a Second Language (TESL)
- Linguistics

General Regulations

It is the responsibility of each student in the Graduate School to know and conform both to the following general regulations and to the additional requirements of his department. These general regulations may change from year to year. Students should consult the **Graduate School Catalog** each year to be aware of current regulations.

University Standards

The maintenance of high standards of honor, integrity, and morality; of graciousness in personal behavior; of Christian ideals in everyday living; and the complete abstinence from alcohol and tobacco are required of every student while on the campus, at home, or wherever he may be as long as he is in student status. Registration signifies a student's willingness to conform to these standards. A copy of the BYU Code of Honor may be found on page 34 of this catalog.

Any pronouncement of disciplinary measures made by the President of the University becomes a part of these regulations. Violations of these regulations make the offender liable to suspension from the University.

Admission

Admission to the Graduate School is contingent upon the completion of the bachelor's degree or its equivalent from an accredited institution.

Students of any race, creed, color, or national origin are accepted for admission to Brigham Young University provided they maintain ideals and standards in harmony with those of The Church of Jesus Christ of Latter-day Saints and meet the University's academic requirements.

Applications for admission may be obtained by a written request to University Admissions Office, A-153 ASB. Be sure to specify whether you desire a degree-seeking or a nondegree application.

A grade-point average of 3.0 is the minimum acceptable for regular degree-seeking status. Students with undergraduate grade-point averages of less than 2.5 are not eligible for admission on either degree-seeking or nondegree status.

In addition to academic qualifications, every student who is not a U.S. citizen must—

1. submit test scores showing evidence of English proficiency (for bilingual only).
2. submit the General Information Confidential Statement of Finances Form to the University Admissions Office prior to being accepted. Forms can be obtained from the University Admissions Office, A-153 ASB, Brigham Young University, Provo, Utah 84602, and
3. register for a minimum of 9 credit hours each semester.

Each international student should keep in close contact with the International Student Office while he is on the BYU campus.

Admission to the Graduate School is contingent upon acceptance in a particular department and program as a degree-seeking student. To be considered, applications

must include each of the following items and be filed before the announced deadlines:

1. Fully completed application form
2. Nonrefundable application fee of \$15
3. Two official transcripts of all college work (BYU transcripts may be unofficial)
4. Three letters of recommendation on the forms provided
5. Confidential interview form
6. Letter of intent
7. Letter requesting use of credit previously obtained (transfer and/or nondegree credit)

Each student is responsible for making sure his application is completed and in the University Admissions Office, A-153 ASB (including the confidential report and all letters of recommendation) by the appropriate deadline.

Each applicant is notified in writing by the Office of the Graduate Dean concerning his admission or non-admission. Application deadlines are as follows (some departments have other deadlines. Please see departmental information):

Deadlines for Graduate School Applications

	Degree	Nondegree	International Student
1976-77			
Fall			
Semester	15 June	1 July	30 April
Winter			
Semester	15 October	30 Nov.	31 August
Spring			
Term	20 February	7 April	31 December
Summer			
Term	15 April	30 May	28 February

Student Classification

Degree-seeking Status

1. **Regular.** Students who have met all prerequisites and are fully accepted by the academic department as ready to proceed with a regular graduate program in that department are placed on **regular status**.
2. **Provisional.** Students who lack prerequisites, language or tool preparation, or who have low grade-point records are placed on **provisional status**. Notice of provisions to be fulfilled is sent to the student with the acceptance form. Fulfillment of provisions as stipulated by the academic department automatically advances the student to regular status.

Nondegree Status

Registration of students with baccalaureate degrees on a nondegree basis is permitted for teacher certification and for taking classes of personal interest to the student. All auditors must be formally admitted and registered.

Credit acquired at Brigham Young University while on a nondegree status or transfer credit from another accredited graduate school is not automatically a part of a degree program. Up to 10 semester hours of this credit may be included as part of a degree program if the student's advisory committee judges these hours to be acceptable.

Academic Sponsor

Every student accepted on a degree-seeking basis is assigned an academic sponsor (who is designated on the acceptance form). The student is expected to make immediate contact with his sponsor, stay in contact, and meet with the sponsor at least weekly during periods of regular enrollment. The sponsor's commission is to guide the student in his registration and individual study until such time as he is ready to proceed under the auspices of an advisory committee. This transition should take place during the first semester of registration.

Advisory Committee

The department chairman will appoint an advisory committee consisting of at least two persons for master's and educational-specialist committees and three for doc-

toral committees. Minor fields must be represented by a member of the advisory committee. The advisory committee is to direct the student through those experiences which will enable him to satisfy all requirements and examinations pertinent to his degree program.

Student Programs

Immediately after the formation of the advisory committee and during the first semester of registration, the student should prepare and file his course outline (Form 3) in the Office of the Graduate Dean. This outline should reflect all prerequisites taken on provisional status, all tool subjects required, thesis credit, and all regular courses to be taken. This course outline must be completed under the direction of the advisory committee and signed by them.

When there is a needed change in the student's program or committee, the change must be requested on official forms provided by the Office of the Graduate Dean to each department (Form 3b) and be approved by the student's advisory committee and the department chairman or graduate coordinator. The forms must then be forwarded to the Office of the Graduate Dean.

As soon as possible after the formation of the advisory committee, the student should file an approved thesis or dissertation prospectus with the Office of the Graduate Dean. Project prospectuses are filed only when required by a department.

Credits Certified by Special Examination

Under certain circumstances, graduate students who are working in degree programs at BYU may have the need to have certain of their credits certified by special examination. It is the policy of the Graduate School that students must pay for these examinations. Payment must be made in advance in an amount equivalent to ordinary registration fees for the amount of credit concerned. This arrangement applies specifically to the following situations:

1. Graduate credit taken at Brigham Young University, or another accredited university in the United States, which has become outdated under the time limit regulations
2. Graduate credit which a student desires to transfer from a nonaccredited institution or from a foreign university
3. Challenge of credit on the course outline for students who already have a good background in a required subject

Applications for these special examinations can be obtained in the Office of the Graduate Dean.

Time Limits

Graduate credits are applicable toward a master's degree only within a five-year period from the time they are received.

All academic credit applicable toward the Educational Specialist Certificate, excluding credit applying toward a master's degree, must be completed within a period not to exceed six years.

All academic credit applying toward the doctor's degree, exclusive of that earned in completion of the master's degree, must be completed within a period not to exceed eight years.

All requirements for a degree must be complete by the day of August commencement in the year in which time limits expire.

Student Load

Graduate students are free to register for the number of hours they can complete during a given term. To safeguard this freedom a nonrefundable overload fee is charged for registration in excess of 16 hours per semester or eight hours per term. Graduate assistants must be registered for a minimum of 6 hours per semester or 3 hours per term. Graduate interns must be

registered for a minimum of $8\frac{1}{2}$ hours per semester or $4\frac{1}{2}$ hours per term.

Continuous Registration

Details of the registration and records procedures are outlined in the class schedule issued each semester by the University Office of Admissions and Records.

When a student is admitted to a degree program, it is expected that he will work continuously and will register in that program until all requirements are completed. Normally a student will register each semester for a minimum of 2 semester hours of credit in work which is filed on his course outline as part of his approved graduate program. Each student must, in any case, meet the following minimum requirements:

1. Complete at least 6 semester hours of approved program credit during each academic year (September 1 to August 20) or pay an equivalent continuous registration fee (accepted in lieu of credit only upon written recommendation of the major department).
2. Register for at least two semester hours of approved program credit during any semester or term in which University personnel are consulted or facilities are used

If a student is suspended for failure to meet the continuous registration requirement, no more than 10 semester hours of credit previously acquired may be applied toward a new degree program if the student reapplies.

Every international student must register for a minimum of 9 hours each semester.

Transfer and Nondegree Credit

Transfer credit (graduate credit only, from another accredited university) and/or nondegree credit, acceptable to a student's advisory committee and not in excess of a total of 10 semester hours, may be applied toward a graduate degree at BYU. Forms for petitioning for such transfers (Form 3b) are available in the major department if the course outline is already on file in the Office of the Graduate Dean. All transferred credit must be of grade B or better. At least 20 semester hours toward the master's degree must be taken on the Provo campus in all programs except education and industrial education. Transfer credit from foreign universities must be certified by examination. For further information see Credits Certified by Special Examination, page 28.

Neither lower-division nor correspondence credit can be applied toward a graduate degree.

Scholastic Standards

A grade-point average of 3.0 for all credit applying toward the degree is required of any student earning a degree in the Graduate School. No D credit can apply toward a graduate degree. A degree-seeking student (regular or provisional) whose grade-point average falls below 3.0 for a given semester shall be placed on academic probation. To remove probationary status, a student must submit an unofficial transcript or grade change to the Office of the Graduate Dean.

Suspension

Graduate students are suspended when there is no reasonable prospect of their being able to complete degree requirements. Suspension is automatic for all students who are on probation for two semesters or for one semester and one term. Suspended students may appeal for reinstatement under certain conditions.

Instructions for Graduation Clearance

Master's Degree Thesis Programs and All Doctoral Programs

1. Forms 6a (application for final examination) and 6b (information for graduation) should be obtained from the department secretary.

2. All course work on the approved course outline must be registered for before Form 6a is submitted. A student who is registered for program course work during the last semester or term may schedule the final examination no earlier than two weeks into that semester or term.
3. The student obtains approval of the thesis (or dissertation) from his advisory committee. The committee signs Form 6a, signifying its judgment that the student is ready for the final oral examination.

Special Note: A brochure entitled "The Preparation of Theses and Dissertations," stating policies and procedures governing theses and dissertations, is available in the Office of the Graduate Dean. Great care should be used to meet the stipulations in this brochure to avoid the necessity of revising the final copies. The dissertation secretary will give advice and make preliminary checks on format upon request.

4. Form 6a, signed by the advisory committee; the completed Form 6b; an unofficial transcript; and at least three copies of the thesis are submitted to the department chairman or graduate coordinator.
5. The department chairman assigns the final oral examination committee, appoints its chairman, sets the time and place of the examination, and distributes the copies of the thesis. He adds the information concerning the oral examination to Form 6a and signs it.
6. Forms 6a and 6b and an unofficial transcript are submitted to the Office of the Graduate Dean by the department chairman at least one week prior to the time of the oral examination. All unclear problems are noted and the signature of the graduate dean is obtained. (If major problems are encountered that would make it inadvisable to proceed with the examination, the graduate dean would consult with the department chairman.)

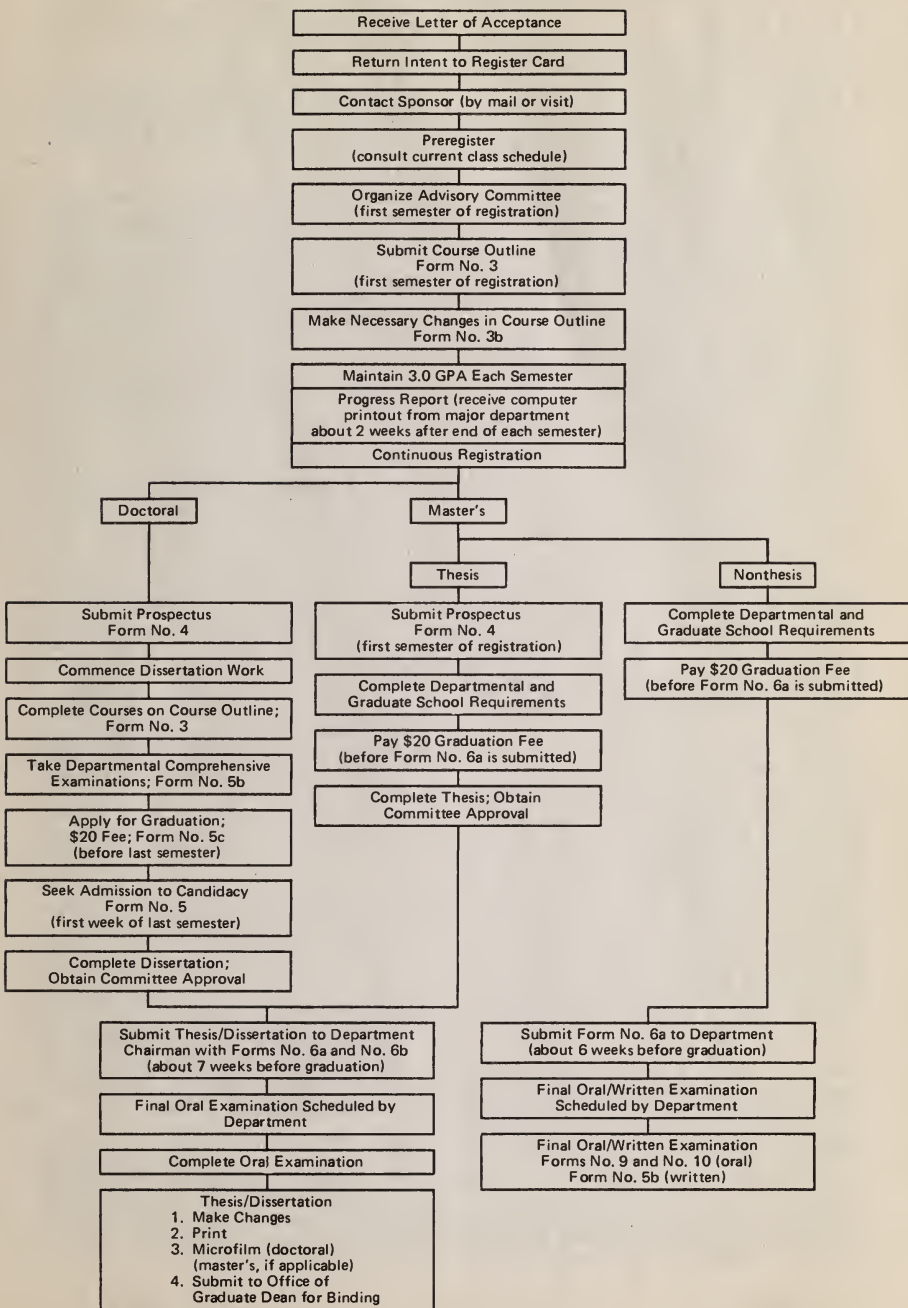
Oral examinations may not be administered during any period in which the University is not in regular session.

7. An approved copy of Form 6a, plus Forms 9 and 10, is conveyed to the department chairman. Receipt of these forms is the signal that the final oral or written examination is official and may proceed.
8. When the final oral examination has been completed, the results are indicated on Forms 9 and 10. One copy of the completed Form 10 is sent to the Office of the Graduate Dean.
9. Each student must be registered for at least 2 hours of approved program credit or pay an equivalent continuous registration fee during the semester of final examination. Fee slips for payment of continuous registration, binding the thesis (\$4.75 per copy), and graduation (\$20.00) may be obtained in the Office of the Graduate Dean.
10. When all corrections are made and the thesis is perfected, four copies of the approved thesis in its final form and the fee receipt are deposited with the dissertation secretary in the Office of the Graduate Dean.
11. When all problems are cleared (including approval of the thesis format and typing), the student is cleared for graduation, a letter of completion, notation of degree on transcript, and receipt of the diploma.

Master's Degree Nonthesis Programs

1. Forms 6a (application for final examination) and 6b (information for graduation) should be obtained from the department secretary.
2. All course work on the approved course outline must be registered for before Form 6a is submitted. A student who is registered for program course

Graduate Degree Worksheet



work during the last semester or term may schedule the final examination no earlier than two weeks into that semester or term.

3. Form 6a, signed by the advisory committee; the completed Form 6b; and an unofficial BYU transcript are submitted to the department chairman or graduate coordinator.
4. The department chairman assigns the final oral examination committee, appoints its chairman, and sets the time and place of the examination. He or she adds the information concerning the oral examination to Form 6a and signs it.
5. Forms 6a and 6b and an unofficial transcript are submitted to the Office of the Graduate Dean by the department chairman at least one week prior to the time of the oral examination. All unclear problems are noted and the signature of the graduate dean is obtained. (If major problems are encountered that would make it inadvisable to proceed with the examination, the graduate dean would consult with the department chairman.)
6. An approved copy of Form 6a, plus Forms 9 and 10 (or 5b for written exams), is conveyed to the department chairman. Receipt of these forms is the signal that the final oral or written examination is official and may proceed.
7. When the final oral examination has been completed, the results are indicated on Forms 9 and 10. One copy of the completed Form 10 is sent to the Office of the Graduate Dean.

The results of the final written examination are indicated on Form 5b, which is signed by the chairman of the examining committee. The white copy is sent to the Office of the Graduate Dean.

8. Each student must be registered for at least 2 hours of approved program credit or pay an equivalent continuous registration fee during the semester of final examination. Fee slips for payment of the continuous registration fee and the graduation fee (\$20.00) may be obtained in the Office of the Graduate Dean.
9. When all problems are cleared, the student is cleared for graduation, a letter of completion, notation of degree on transcript, and receipt of the diploma.

Graduate Awards

Further information concerning graduate awards is available through the Graduate Awards Office, B-336 ASB.

Teaching and research experience are seen as integral and indispensable parts of graduate student programs. For this reason, graduate awards given by Brigham Young University are in the form of teaching and research assistantships and internships. These awards are administered through the academic departments of the Graduate School and vary according to the requirements and opportunities of the different disciplines. The most remunerative of these awards totals \$4900 per academic year. Application for these awards should be made through the chairman of the academic department.

Students receiving BYU awards must register during the regular registration period to claim their awards.

The three basic types of financial assistance available are:

Internships. Professional internships with outstanding professors ranging from one-fourth to one-half time are available in most departments. Students on this award must have and maintain a 3.5 grade-point average. The type of experience provided varies widely according to the academic field.

Assistantships. Teaching and research assistantships are available in most departments.

Supplementary Awards. These grants may be used only for payment of fees and range up to \$360 per semester according to arrangements in particular departments.

Student Loans and Financial Aids

Limited funds are available to help students remain in school when financial emergencies have arisen and personal or family resources are not available.

Short-Term Loans

Short-term loans are available for emergency assistance for tuition, books, fees, and other school expenses to full-time day students. These loans are made in small amounts for immediate requirements. Repayment is required within the current semester.

Church Student Loan Fund

The Church of Jesus Christ of Latter-day Saints makes aid available through a long-term loan program by which loans may be made to worthy full-time LDS students who are in critical financial need for tuition, books, fees, and other school expenses. Loans may be made each year in amounts usually not in excess of \$800 for graduate students. The student may be permitted to delay making repayment until after he discontinues his full-time status at BYU.

Application

Information regarding student loans and application forms for loans are available from the Office of Student Financial Aid, A-41 ASB.

Master's Degree

Amount and Distribution of Credit

The master's degree requires a minimum of 30 semester hours of credit.

The master's thesis must carry a minimum of 6 hours, but no more than 6 hours of thesis credit may count toward the 30-hour minimum. The thesis credit shall include such disciplines as review of the literature, all thesis research, and the writing of the thesis. Registration for thesis credit (1-6 hours per semester as approved by the chairman of the advisory committee) and work on the thesis must be concurrent.

A graduate student may apply toward requirements for the master's degree a limited amount of credit earned by taking certain upper-division undergraduate courses at BYU which have been approved by the graduate advisory committee at the time of registration or appear on the course outline of a degree-seeking student. At least 20 hours of the credit for the master's degree must be in the 500 series or above.

A department, after authorization by the Graduate Council, may function under Option I and/or Option II. The following options for master's programs are available.

Option I

At least 15 semester hours, exclusive of thesis, must be in the major field and at least 9 semester hours in a minor field approved by the major department. The minor department must approve the specific courses which constitute the minor.

Option II

Thirty hours must be in the major field or in direct support of the major field. Under this option at least 12 hours must be in the major field of course work in a regular 30 to 32-hour program.

Educational Specialist Degree

Admission Requirements

Students seeking admission to the educational specialist program must present evidence of a valid teaching credential, completion of at least two years of teaching or administrative experience, and a master's degree. The Graduate Record Examination (Aptitude and Advanced Test in Education) is prerequisite to admission as a regular degree-seeking student.

Academic and Residence Requirements

The Educational Specialist degree requires 60 semester hours of work beyond the baccalaureate degree. Programs are designed to meet the requirements of the Utah State Board of Education for state endorsements to the Professional Certificate. Twenty-four semester hours and three full-time registrations must be completed on the University campus. Advisory committees, appointed following the admission of the student to the program, will assist students in the preparation of a course of study.

Doctor of Education Degree

Admission Requirements

For admission to degree-seeking status as a doctoral applicant, the student must have completed 22 semester hours of education, or possess certification as a teacher, and must have completed two years of successful professional experience. Consult departmental announcements for specific requirements. Successful completion of a 3-hour seminar is prerequisite to admission on regular status.

Classification of Doctoral Students

Students seeking the Doctor of Education degree are classified as **degree applicants** and **degree candidates**. The student becomes a doctoral applicant upon recommendation by his department chairman or graduate coordinator. The department will normally require an examination or other screening procedure prior to this recommendation. The student is admitted to candidacy after meeting conditions for admission to candidacy and before registering for the dissertation and internship.

Academic and Residence Requirements

The equivalent of a minimum of three years of full-time study beyond the bachelor's degree is required. Full-time study is defined as at least 9 hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements. At least two consecutive semesters (or two consecutive full-time summer sessions with an intervening supervised field experience of 5 semester hours for each of two semesters for members of an organized group), during each of which a student is registered for not less than 9 semester hours, must be taken on the Provo campus.

A minor must consist of at least 12 semester hours of approved credit.

Tool Requirement

There is no foreign language requirement. The student must demonstrate proficiency in statistics to the satisfaction of the advisory committee.

Comprehensive Examination

The student must pass a written comprehensive examination in his doctoral field under the direction of his major department. The minor department will be responsible for examining the student in the minor area. This examination will normally be given at the end of the second year of graduate study. Departments may also require an oral portion of the comprehensive examination.

Admission to Candidacy

To be eligible for advancement to candidacy, the student must satisfactorily pass the final qualifying written examination and submit a dissertation prospectus approved by his doctoral advisory committee. The student has the responsibility for filing with the Office of the Graduate Dean Form 5, Request for Admission to Candidacy, when all conditions for candidacy have been met. Notice

from the Office of the Graduate Dean then admits the student to candidacy for the degree.

Dissertation

A minimum of 12 hours of dissertation credit must be attained. An oral examination on the student's dissertation must be completed successfully by each candidate.

Doctor of Philosophy Degree

Classification of Doctoral Students

Students admitted to the Doctor of Philosophy degree program are classified as **degree applicants** and **degree candidates**. The student becomes a doctoral applicant upon recommendation by his department chairman or graduate coordinator. The department will normally require an examination or other screening procedure prior to this recommendation.

Academic and Residence Requirements

A full semester of residence credit is defined as at least 9 hours in course work or the equivalent in research per semester. The advisory committee has authority to decide what work will be accepted to meet these requirements. Ordinarily two years of full-time course work or research or its equivalent are to be taken on the Provo campus. At least two consecutive semesters of work, during each of which a student is registered for not less than 9 semester hours, must be taken on the Provo campus. These two semesters are in addition to any residence completed in a master's program.

A minor must consist of at least 12 semester hours of approved credit.

The doctoral degree is awarded to a student when he has demonstrated his personal competence at an acceptable level in an appropriate field of endeavor. While successful passing of University course work contributes to the student's development of this competence, such activities alone do not assure him of reaching an appropriate level. Therefore, no minimum number of formal course credit hours can be identified as guaranteeing competence at the doctoral level.

Normally, a minimum of six semesters of full-time study beyond the baccalaureate degree or four semesters of full-time study beyond the master's degree is required for the Ph.D. or Ed.D. degrees. Attainment of skill in language or other tool subjects is independent of this minimum requirement.

The graduate student gains competence by means of many types of activity. Most of these involve services provided by the University, such as faculty time for guidance and evaluation, library resources, and office and laboratory spaces and facilities. It is therefore necessary that the student compensate the University for a part of this cost. While different programs involve various lengths of training, in no case will the doctorate degree be awarded until the student has paid to the University registration fees equivalent to six full-time semesters; or, if the student submits acceptable transfer graduate credit, registration fees will be reduced, but in all cases fees paid must be equivalent to a minimum of four semesters of full-time study.

Tool Requirement

For academic areas in which a significant body of subject matter related to the pursuance of the Ph.D. degree is published in languages other than English, it is expected that doctoral candidates will include foreign languages as a necessary prerequisite to study in their respective fields. Where justified by the subject matter of the major area, however, a tool subject replacement for foreign language may be made.

In any case, the foreign language or the tool subject requirement should be considered a prerequisite to regular status as a degree-seeking student and is not to be

considered as part of regular course work for accumulating credit hours in the major or minor fields of study.

Any of the four options below will satisfy the language-tool subject requirements. Departments specify which requirement or requirements are appropriate for their respective areas as approved by the Graduate Council.

Tool Requirement I: Single-Language

The student shall be required to demonstrate a thorough familiarity with French, German, Russian, or Spanish. Fulfillment of this requirement will be manifest through examination that will demonstrate (1) the candidate's ability to translate literature in the field of specialization with a competent level of speed and accuracy and (2) the candidate's ability to communicate orally in the language with acceptable facility.

In lieu of a special examination that will demonstrate adequate use of the foreign language selected, this requirement can be met by the completion, with an average grade of B (3.0) or higher, of a minimum of 22 semester hours in the language. Students familiar with the language may be able to earn the first 16 of the total 22 semester hours' credit by special examination, thereby qualifying them to register for the remainder of the credit from courses 321, 415, and 416, or their equivalent.

In either case, competency must be certified by the language department involved.

Tool Requirement II: Two-Language

Any one or a combination of the following provisions meets the two-language requirement. One of the languages must be French, German, Russian, or Spanish. The second language may be one recommended by the department and authorized by the Graduate Council.

1. Successful completion of ETS examination (given only in French, German, Russian, or Spanish). Dates of and application for these examinations are made with the BYU Testing Service, B-268 ASB.
2. Successful completion of the language course 95R in either or both acceptable languages (offered only in French, German, or Spanish).
3. Successful completion of 16 semester hours of credit in the foreign languages that are approved by the major department and the Graduate Council for the degree program. An average grade of B (3.0) must be attained.

Tool Requirement III: One Language and One Tool Subject

This requirement may be met by including one of the languages in Option II plus 8 to 10 credit hours in any combination from the Departments of Statistics, Computer Science, or Mathematics as approved for each department by the Graduate Council. Hours in mathematics would be beyond Math. III.

Tool Requirement IV: Single Tool Subject

This option would normally consist of an integrated program of 18 to 21 semester hours of undergraduate studies in the Departments of Mathematics, Statistics, and Computer Science in any combination, as approved for each department by the Graduate Council, showing systematic tool development. Hours in mathematics would be beyond Math. III.

Comprehensive Examination

The student must pass a written comprehensive examination in his doctoral field under the direction of his major department. The minor department will be responsible for examining the student in the minor area. This examination will normally be given at the end of the second year of graduate study. Departments may also require an oral portion of the comprehensive examination.

Admission to Candidacy

Satisfactory completion of the language requirement and the comprehensive examination, submission of the Appli-

cation for Graduation form and payment of graduation fee, and submission of a dissertation prospectus approved by an advisory committee, are necessary for admission to candidacy for the Doctor of Philosophy degree.

The student has the responsibility of filing Form 5, Request for Admission to Candidacy, with the Office of the Graduate Dean when all conditions for admission to candidacy have been met. Notice by the dean of the Graduate School then admits the student to candidacy for the degree.

Dissertation

A minimum of 18 hours of dissertation credit (799) must be attained. An oral examination on the dissertation must be completed successfully by each candidate.

General University Services

University Library

The Harold B. Lee Library contains the library collection, which includes over a million bound volumes and an extensive collection of pamphlets and titles on microform. Numerous professional journals and other current serials, as well as local, regional, and national newspapers, are also available. The library is a depository for United States, United Nations, Mexican, and Canadian government documents, and regularly receives publications of state and local governments.

The general library facilities are available to students, faculty, alumni, and other interested persons. Regularly enrolled students present their identification cards to borrow books; others may obtain a permit from the circulation librarian. The library is open during the academic year from 7:00 a.m. to 11:00 p.m., Monday through Friday, and from 8:00 a.m. to 11:00 p.m., Saturday.

The general collection and subject reference materials are available on open shelves on four of the five levels—two below and two above the ground floor. The library's special collections, many of which are confined to specific subject areas, are located on the fourth level. An information booklet is available at the general reference desk to assist those who use the library facilities.

In addition to printed materials, the library maintains and provides access to an extensive collection of nonprint media through the Educational Media Services (located in the Harold R. Clark Building) and well-equipped learning resource centers (at various locations on and off campus as well as within the Lee Library). For additional information on these services, ask for a brochure at the general reference desk.

The facilities of other libraries operated by the LDS Church are also available to students of Brigham Young University. The Genealogical Society Library in Salt Lake City contains approximately 100,000 books and over 800,000 rolls of microfilm. The Utah Valley Branch Genealogical Library, operating under the general direction of the Genealogical Society, is headquartered at the Harold B. Lee Library.

Students and faculty may also use the facilities of other Utah college and university libraries through a cooperative arrangement instituted by the University and College Library Council of Utah. The BYU Library is a participating member of that council.

Facilities of the library of the Church Historian's Office are available by arrangement to advanced students for research. The office is located in the new LDS Church Office Building in Salt Lake City, and is open from 8:30 a.m. to 5:00 p.m., Monday through Friday.

Evening Classes

Regular graduate credit is given for evening classes. Day students may enroll in evening classes by indicating "Section 90" on their preregistration forms. Class schedules, listing classes and giving detailed information

about all procedures, are available free of charge upon request.

Evening class registration should not be confused with official admission to the Graduate School. It is the student's responsibility to seek admission to the Graduate School. Evening class registration for community students may be completed by mail. Check the class schedule for complete information.

Off-Campus Centers

The University has established several off-campus centers for continuing education:

BYU-California Center, 12550 Brookhurst Avenue, Suite D, Garden Grove, California 92640.

BYU—Hawaii Center, Laie, Hawaii 96762.

BYU-Ogden Center, 555-24th Street, Ogden, Utah 84401.

BYU-Ricks Center, 241 South 1st West, Rexburg, Idaho 83440, and 2630 North Yellowstone Highway, Idaho Falls, Idaho 83401.

BYU-Salt Lake Center, 401 12th Avenue, Salt Lake City, Utah 84103.

Additional classes are offered in other geographical areas, administered by the campus-based department of Off-Campus Lectures and Courses.

Registration Requirements

Any individual with a baccalaureate degree may properly register for graduate classes. Not more than 10 hours of credit may be accumulated at the centers prior to the time of admission to the BYU Graduate School.

Application for Admission

A student desiring to enroll in a graduate program at BYU must take the initiative and be admitted to the Graduate School on a degree-seeking basis. Graduate application packets and letter forms are available at each center. Entrance examinations are also given periodically at the centers or may be taken at BYU in Provo.

Computer Services

Computer Services provides extensive computing and card-processing (EAM) facilities to all faculty, staff, and students. In addition to equipment, considerable computer library programs and experienced personnel are available to help users with their particular problems. Academic users should contact the Assistant Director of Computer Services—Instructional, 403-C ESTB, Ext. 3288. All users pay the costs of Computer Services operations according to approved funding-control procedures.

Consulting services are available at 146 TMCB, 424-A ESTB, and 139 ESC. Hours are posted in each consulting room. Short modular classes are conducted regularly in various basic computer subjects.

The Computer Services *User's Guide* is available in the BYU Bookstore.

The major computers on campus include the IBM 360/65, DEC-10, and IBM 7030. Over thirty mini computers are available in different departmental locations.

Statistical Services

Statistical Services is a cooperative effort among Computer Services and the departments of Statistics and Mathematics and is designed to assist with those phases of research projects that require statistical design and analysis, numerical analyses, or special computational techniques.

All research can be more productive if the initial planning includes adequate attention to the proper design of the experiment or survey and the choice of an appropriate sample size. Proper execution of these two steps significantly improves the chances of the research

goals being met. In addition, appropriate analyses and interpretation of the experimental results are vital to well-executed research projects. Statistical Services provides assistance in all of these areas. To obtain maximum benefit this service should be used in the formative stages of research projects, since the validity of final inferences is greatly dependent upon the experimental or sampling design.

These services are available by appointment through the Department of Statistics, 204 TMCB.

Placement Center

The Placement Center, located in the Abraham O. Smoot Administration and General Services Building, assists graduating students and alumni in finding desirable positions in their fields in business, industry, government, and education. This office works in close cooperation with deans and department chairmen.

The placement service includes a placement library where interested students may find books, articles, magazines, and brochures that will acquaint them with employers in whom they may be interested and also books and pamphlets that contain advice on such matters as how to conduct oneself in an interview, how to write effective letters of application, how to find employment, etc.

All students are urged to register with the Placement Center early in the school year in which they will complete requirements for a degree. Early registration will enable that office to give the most effective possible assistance to each graduate seeking employment.

Student Employment

In the Employment Office assistance is given to students in finding part-time employment. This includes help not only in placing students in positions on the University campus, but also in finding part-time employment off campus.

Students needing employment are urged to register with the Employment Office as soon as possible after they arrive in Provo and are available for work. The best schedule for which part-time work can be arranged is one where the free hours (a block of three to four hours) are in consecutive order at the same time each day. Inasmuch as the number of students seeking part-time work is high, those whose need is great are requested to report periodically at the Employment Office after filing initial application.

Students from foreign countries are required to obtain a work permit before they may take employment. Such students may receive assistance in obtaining the necessary permit from the international student adviser.

Security and Traffic

The Security/Police is a protective agency established for the benefit of students, faculty, and staff. It maintains effective liaison with the local police department and is entrusted with the proper enforcement of campus rules and regulations. All matters concerning security or requiring police action should be referred to this office, B-66 ASB, by calling Ext. 2751.

Another major responsibility of this office is the control of campus traffic and parking. Every BYU student who owns, maintains, possesses, stores, or drives any motor vehicle in or about the state of Utah or intends to drive any such vehicle on the BYU campus must register that vehicle with the Security Office within two (2) days after bringing it to the Provo area.

The Security/Police offers many other services to students and staff members, including the taking of fingerprints necessary for teaching certificates, government jobs, and ROTC between the hours of 10:00 a.m. and 12:00 noon Monday through Friday. In addition, an ambulance service is maintained in cooperation with the student health center, at no cost.

Automobile Registration

To obtain a parking or registration permit, the following must be presented at the Traffic Office, B-69 ASB:

1. Licence plate number
2. The appropriate fee (no fee for registration only)
3. The name of insurance company with which the automobile is insured
4. Proof of no-fault insurance (automobiles)
5. Proof of liability insurance (motorcycles)

Traffic Regulations

Every student who is a resident of Utah or of a state other than those listed below must have a Utah license if he wishes to drive in Utah. The following states have entered into a compact and a license from any of them is good in all others:

Alabama	Indiana	New Mexico
Arizona	Iowa	New York
Arkansas	Kansas	Oklahoma
California	Louisiana	Oregon
Colorado	Maine	Tennessee
Delaware	Mississippi	Utah
Florida	Montana	Virginia
Hawaii	Nebraska	Washington
Idaho	Nevada	West Virginia
Illinois	New Jersey	

For further details regarding traffic rules and regulations, the booklet **Traffic Rules and Parking Regulations** may be obtained at no charge from the Traffic Office, located in the Abraham O. Smoot Administration and General Services Building B-69, extension 3906. All students and faculty/staff members will be responsible for the information contained therein.

Brigham Young University maintains a zoned parking system. Upper-class permits—for juniors, seniors, and graduate students—are \$12. Lower-class permits—available to all students—are \$6. The required registration is free but allows no campus parking until after 4:00 p.m.

Nonresident

Students from out of state who do not have Utah license plates on their cars may obtain a nonresident permit for their vehicles as long as their main purpose for being in Provo is education. Full-time employees of the University or students whose wives are full-time employees do not qualify; they must purchase Utah plates and pay Utah property taxes on their vehicles. Either a nonresident permit or Utah license plates must be obtained immediately upon registration at the University. To obtain a nonresident permit the student must present the following at the Information Booth located across the street from Helaman Halls or about 200 East 1230 North:

1. Home-state vehicle registration certificate
2. Proof of current safety inspection from Utah or home state
3. Fifty cents
4. BYU activity card

Lyceums and Forums

Almost since its founding Brigham Young University has been bringing to its students distinguished men and women in the arts and letters. The lyceums, usually evening programs, are of cultural value. Forum assemblies feature speakers and artists who can offer students a better understanding of contemporary civilization.

University Fees

The University reserves the right to change these figures without notice.

All students who register will be required to pay tuition and fees at the time of registration. Students are held responsible to pay the correct tuition and fees (in U.S. dollars).

Approximately 70 percent of the cost of operating the University is paid from the tithes of the LDS Church. Therefore, students who are active Church members, or their families, already have made a monetary contribution to the operation of the University. To equalize this burden somewhat it is necessary to charge nonmembers a higher tuition. This disparity is similar to the higher tuition that state universities charge to nonresident students. Even the higher total payment, however, does not cover the total educational cost of nonmembers of the Church.

A fraction of an hour is, for fee assessment purposes, counted as a full credit hour.

The charge for noncredit courses or for auditing courses is the same as for credit courses. Noncredit courses taken by part-time students will be assessed on the basis of hours involved in lecture classes. For example, 3 hours of lecture a week would be considered 3 semester hours and would be charged for accordingly. Therefore, if a student were taking 7 credit hours plus a noncredit class involving 2 or more lecture hours per week, he would be considered a full-time student and must register as a full-time student. For courses in which no lecture hours are involved—for example, dissertations and theses—tuition and fees will be charged based on hours being carried during the semester, as determined by the supervising professor.

All graduate students who are not regularly registered but continue to use University services or facilities (including consultation with a major professor) will pay the minimum tuition equivalent to 2 semester hours during each semester in which University services or facilities are used.

Advanced-standing Students

With the exception of students enrolled in the Law School or in the Graduate School of Management, all students at the University who have completed 136 semester hours or more of credit prior to the term or semester for which they are registering will be designated as advanced-standing students. Among those who have advanced standing are students completing their first or second bachelor's degree, those taking classes while fulfilling a change in academic majors, graduate nondegree students, and graduate degree-seeking students.

Students in this category should be aware of the non-refundable overload fee for registrations of over 16 hours per semester or over 8 hours per term. Because a subsequent reduction of course load will not relieve the overload assessment, advanced-standing students should register for exactly the classes they need.

Admission Application Fee

A \$15 nonrefundable application fee must accompany the admissions application, both to be submitted by specified deadline dates.

Late Registration Fee—Semester

A late registration fee is assessed all full-time and part-time students for failure to complete registration on scheduled dates. No exception is made, regardless of the reason for being late.

Any student whose check is dishonored by his bank will be charged a handling fee of \$5. If the check was for tuition, there will be an additional charge of the late fee in effect at the time the check is redeemed.

Refunds—Semester

In the event of withdrawal by a student, a refund will be made on the basis of a charge of \$10 (\$5 for a part-time student) even though the student does not complete registration or attend school, plus a per-day charge of 3 percent of the total tuition and fees paid or payable for the semester. The days charged for will be the school days beginning with the first day of the semester in

Tuition and General Fees

	Per Semester (Fall or Winter)		Per Term (Spring or Summer)	
	LDS Member	Nonmember	LDS Member	Nonmember
Law School Students:				
Full-time				
Semester (over 8 credit hours)	\$650.00	\$975.00	\$325.00	\$487.00
Term (over 4 credit hours)			\$67.00	\$100.00
Part-time	\$67.00	\$100.00	per hour	per hour
Graduate School of Management Students:				
Full-time				
Semester (over 8 credit hours)	\$470.00	\$705.00	\$235.00	\$352.00
Term (over 4 credit hours)			\$48.00	\$72.00
Part-time	\$48.00	\$72.00	per hour	per hour
Advanced-standing Students:				
Full-time				
Semester (over 8 credit hours)	*\$400.00	*\$600.00	*\$200.00	*\$300.00
Term (over 4 credit hours)			\$41.00	\$62.00
Part-time	\$41.00	\$62.00	per hour	per hour
*Nonrefundable Overload Fee	\$15.00	\$15.00	\$15.00	\$15.00
	per hour	per hour	per hour	per hour
	over	over	over	over
	16 hours	16 hours	8 hours	8 hours

which classes were held following the date on which the student registered, to the day on which the student reported his withdrawal to the Office of the Graduate Dean, both days inclusive.

Late fees are not refundable.

Any refund due a student because of withdrawal from school will be made only by check, through the mail, approximately three weeks from the date on which the student reported his withdrawal and surrendered his receipt or activity card to the Office of the Graduate Dean.

No refund will be granted to a student who is requested to withdraw for scholarship or other causes.

No refund will be made after August 31 of the school year in which payment was received by the University.

Class Fees

Education 578R, 673R (2 credit hours)	\$15.00
Education 578R, 673R (4 credit hours)	25.00

These education fees are to be paid at the time of application for student teaching. An additional \$10 late fee is assessed if application is completed after March 31 for Fall Semester and October 15 for Winter Semester. The \$10 late fee is not refundable under any circumstances.

Music 660R (45-minute lessons)	95.00
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Miscellaneous General Fees and Fines

Activity cards	
Duplicate card fee	\$ 3.00
Identification photo	3.00
Spouse activity card per semester (non-refundable)	5.00
Automobile and motorcycle registration and parking fee:	
Zone B	
Fall and Winter semesters	12.00
Winter Semester only	6.00
Spring and Summer terms	6.00
Summer Term only	3.00
Zones C and D	
Fall and Winter semesters	6.00
Winter Semester only	3.00

Spring and Summer terms	3.00
Summer Term only	1.50

*Registration is mandatory and no fee is charged if student elects NOT to park on campus.

Bicycle registration (Provo City License)	3.00
Change of grade fee (unless the change is the responsibility of the University)	3.00
Change of registration fee (for each change slip presented after the first two weeks of each semester)	5.00
Deposits	
Chemistry (each laboratory class)	10.00
Industrial education	1.00
Physical education locker fee (nonrefundable)	1.00
Examination, repeat foreign language for advanced degree	10.00
Graduate Special Examination	
To update credit and/or transfer credit from a nonaccredited institution or from a foreign university whose academic standards are not known to the faculty at BYU. (See page 28, Credits Certified by Special examination.)	
Graduate student continuous registration fee (for graduate students using University facilities without formal registration for University classes) per semester	2-hour rate
Graduation fee, master's or doctor's degree (only 50 percent refunded if degree is not obtained)	20.00
Incomplete grades	
A student must complete an incomplete course within one year of the date the incomplete grade was given. Fee to remove incomplete grade and record permanent grade	
Microfilming (dissertation only)	25.00
Music recital fee (solo or joint recital)	35.00
Parking violation fines	2.00 to 15.00
Records	
Hold fee (to release holds placed on records because of financial delinquency)	2.00
Search fee (duplicate receipt)	1.00

Transcript fee (\$1.00 for first copy on every order, plus \$.50 for each additional copy)	1.00
Thesis binding (4 copies)	19.00
Traffic violation fines Variable, according to violation	

Student Personnel Services

The Student Personnel Services offer valuable assistance in the following areas that affect graduate students: academic standards, counseling service, foreign students advisement, health services, student organizations and social life.

Dean of Student Life

The dean of student life is the chief administrative officer of Student Personnel Services. He initiates and recommends to the President needed policies and procedures in student life, and administers the program and coordinates the agencies at work on student problems.

Personal Development Center

The overall purpose of the Personal Development Center is to promote the personal growth of individuals within society and within the University community. To reach as many students as possible, the Personal Development Center extends itself beyond the confines of the center by locating counselors in a number of areas on campus. The services provided to students include (1) counseling, (2) skills development, (3) testing, and (4) information.

Counseling

A great number of students seek counseling each year for a variety of reasons. In general, they come to the center for reasons of growth or decision making. Specifically, students come for help in such areas as making vocational choices or choosing majors, dealing with study problems, developing social and interpersonal skills, growing in greater self-understanding, and working through personal problems. Some students find that individual counseling on a one-to-one basis with a counselor offers greater assistance, while others may benefit more in a group counseling situation, where several students and a counselor meet together. In both individual and group counseling, the primary focus is not upon the student's deficits or upon long-term therapy—although the latter is not neglected; rather, it is upon assisting the student to grow, mature, and accept full responsibility for his actions.

Skills Development

In addition, the Personal Development Center provides a program to assist students in developing academic, social, and interpersonal skills to help them cope more effectively with college life and other situations. Students may participate in one or more of a variety of learning programs, where they may be taught the skills they wish to improve. Such a program may be individually worked out for each student through the help of a counselor.

Testing Services

Tests for achievement, ability, interest, and adjustment are given to all students who request them through a counselor. Data from these tests are used as a basis for counseling in educational-occupational and personal-social problems.

Student Life Learning Resource Center

A comprehensive current collection of essential occupational, educational, personal, social, and spiritual development information is maintained in the Student Life Learning Resource Center. The collection includes print media, filmstrip and tape-sound presentations, and videotape and cassette-audio presentations. There is an abundance of materials available relating to personal and social adjustment, including such areas as: personality adjustment, dating, marriage, budgeting, personal groom-

ing, college adjustment, study habits, and an extensive selection of current catalogs from major universities and technical schools.

International Student Advisement

International students include all students who have F-1, J-1, or immigrant or permanent resident visas, even if the holder is currently residing in the United States. All correspondence regarding admissions and other matters should be addressed to the Admissions Office (A-153 ASB).

While on the BYU campus, international students should keep in close contact with the International Student Office and take advantage of the services offered by the staff of this office.

Student Health Service

Student health services are available at the Howard S. McDonald Health Center for all full-time students carrying 8½ credit hours or more, who have a valid activity card. The center functions year-round, with regular clinic hours, by appointment, from 8:30 a.m. to 4:30 p.m., Monday through Friday. After 4:30 p.m. daily, and on Saturday, Sunday and holidays, the center is open to urgent care and there is an extra fee charged for seeing a physician during these times. Hospitalization, when necessary, is available at the Utah Valley LDS Hospital.

The health center offers the following services at a reasonable rate:

1. Consultation with a nurse-practitioner, general physician, or specialist—by appointment—between 8:30 a.m. and 4:30 p.m. weekdays
2. Immunization
3. Pharmacy
4. Physical therapy on referral from a physician
5. Laboratory tests
6. X-ray examination
7. Emergency care twenty-four hours a day

A doctor will be summoned after hours for emergencies on a fee-for-service basis. Services not available at the health center are available by referral at outside facilities.

A student may elect to prepay for his care at the health center by joining the Student Health Plan, which entitles the student to the services of the health center without additional cost. For more information on the Student Health Plan, see the health center brochure.

To complement the services of the student health center, a supplemental insurance program, designed to cover the major cost of medical care twenty-four hours a day, is offered to all full-time students at a nominal cost. This voluntary program is fully endorsed by the University and provides for a wide range of medical services. Students not otherwise protected by health insurance are urged to secure this excellent service. For further information, insurance brochures are available at the health center.

Eligible students are not required to have insurance or to participate in the health plan to use the student health center.

The health center is bound by the laws of confidentiality, and personal information will not be released to a third party without written permission from the patient.

The BYU Code of Honor

The Church of Jesus Christ of Latter-day Saints sponsors Brigham Young University in order to provide students with a university education in an atmosphere consistent with the ideals and principles of the Church. The maintenance of high standards of personal behavior and appearance is essential to the preservation of that atmosphere and also to the development of men and women who personify those ideals and principles. By enrolling or accepting employment at Brigham Young University a person signifies his willingness to live in accordance with the following principles, whether on or off campus:

1. Abide by the standards of Christian living taught by The Church of Jesus Christ of Latter-day Saints.

This includes graciousness and consideration for others and the observance of high principles of honor, integrity, and morality.

2. Be honest in all behavior.
This includes not cheating, plagiarizing, or knowingly giving false information.
3. Respect personal rights.
This includes—
(a) not physically or verbally abusing any person and not engaging in conduct which threatens or endangers the health or safety of others.
(b) not obstructing or disrupting the study of others, the performance of official duties by University officers or employees, the teaching, research, disciplinary, administrative, or other functions of the University, or other authorized activities on University premises.
4. Respect property rights.
This includes refraining from theft, concealment, damage, or misuse of the property of others.
5. Obey, honor, and sustain the law.
6. Avoid drug abuse.
This includes refraining from the possession, use, or distribution of any narcotic or dangerous drug (as defined by applicable law), except as prescribed by a licensed medical practitioner.
7. Comply with all University regulations.
This includes compliance with rules relating to campus organizations and to the use of University or off-campus housing or other facilities.
8. Observe the Word of Wisdom.
This includes abstinence from alcoholic beverages, tobacco, tea, and coffee.
9. Live the law of chastity.
This includes abstinence from all sexual relations outside the bonds of marriage.
10. Observe high standards of taste and decency.
This includes refraining from disorderly, lewd, indecent, or obscene conduct or expression.
11. Observe University standards of dress and grooming.
12. Help others fulfill their responsibilities under this Code.

Veterans' Service

All veterans should have their military experience evaluated for credit by the Office of Admissions and Records.

For information concerning educational benefits available to those who qualify under the Veterans' Readjustment Benefit Act, please contact the Veterans' Affairs and Selective Service Office, B-234 ASB, or call Ext. 3433. Forms for certification may be secured and processed to assure proper payment of benefits.

War Orphans Education Program

Students who are dependents of veterans under the War Orphan Education Program, and who are entitled to benefits, should also contact the above office for enrollment certifications and related information.

Religious Opportunities

Students have many excellent opportunities to participate in religious activities, which have always been an integral part of the educational program at Brigham Young University.

BYU Stakes

The Church is organized into a number of stakes, and each stake is composed of several branches of 200 and 300 members each. The stakes and branches are organized specifically to provide students the maximum opportunity for active participation in programs of the Church. Spiritual growth and the development of a strong testimony of the divinity of Jesus Christ are goals fostered by the campus stake and branch organizations,

whose programs are closely correlated at all levels with the activities of the University.

All single LDS students living away from home become members in one of the BYU branches. Married students not living in University housing may attend either the BYU branch or the city ward in which they reside. The membership records of students remain in the BYU stakes until they finish their schooling at the University.

Devotional Assemblies

Devotional assemblies are held on Tuesday mornings and are scheduled so that there is no conflict with classroom work. These assemblies enable students to hear messages of inspirational power from carefully chosen Church leaders, including many General Authorities of The Church of Jesus Christ of Latter-day Saints.

Student Housing

Learning to live harmoniously with other people under the right kind of living conditions plays a vital part in a college education. Students living in groups, working, studying, and enjoying recreation together, gain much from each other. The conversations, good fellowship, and activities experienced in group living contribute to a person's whole development. Participation in democratic, self-governing living activities brings about a phase of education which can be gained in no other way.

The Office of Student Housing, established to assist students with their housing needs, is located in the Abraham O. Smoot Administration and General Services Building, Room C-169. All inquiries or administrative problems relating to housing needs should be referred to this office.

Campus Housing

Residence-Hall Supervision

Each area of campus housing is organized under the supervision of a person with professional training and experience for this type of work. The residence-hall staff carries out a program designed to provide each student with experiences in democratic self-government, in cultivating the responsibilities that go with maturity and independence, and in learning the art and science of human relationships in working and living with others. The staff assists the student to achieve a sense of belonging and to develop social competence through planned social and recreational programs. Head residents are available for general counseling. They carry out the residence-hall program in cooperation with other University academic services.

Applications

A student who plans to enroll at the University and live in a University residence hall should make inquiry to the Office of Student Housing about a year in advance. A housing application form will be sent to each inquiring student. A \$25 application fee is required and should be enclosed with the completed application form when it is returned to the Office of Student Housing. A residence-hall assignment and appropriate agreement forms are prepared on a basis of the date of receipt of the application form by the housing office and are mailed in the spring and early summer.

Acceptance to University Housing

The validating of any campus housing reservation is contingent upon the student's official acceptance and admission to the University. For admission to the University contact the Graduate Admissions Office, B-336 ASB.

Rental Agreements

A student planning to live in campus housing may expect to sign a rental agreement for the accommodations he will occupy. He should be prepared to live by the terms of this agreement once he has signed and returned it to the Office of Student Housing. Misunderstanding and financial loss can be avoided by a student if he will read

and familiarize himself with the terms of the agreement before signing it.

Apartment Living for Women

Housing for women is provided in twenty-four Heritage Halls. These are apartment-type buildings. Each apartment consists of a combination kitchen-dining-study room arrangement, three bedrooms, and a bath. In addition, there are large living rooms, a recreation room, a head resident apartment, and laundry and storage facilities in each building. Six girls occupy an apartment and live cooperatively, preparing their own meals. The apartments are completely furnished except for bedding, kitchen utensils, and dishes. The facilities are excellent and offer a high standard of living for college students. The approximate annual rate for these accommodations is \$405. Food is purchased cooperatively by the residents of each apartment.

Help in the homemaking experiences of budgeting, buying, meal planning, and the selection, care, and construction of clothing is available from specialists who are assigned to Heritage Halls. In addition, a specialist is available to assist students in planning social activities, developing recreational skills, and learning wise use of leisure time.

Each woman student desiring to live on campus should consider carefully the type of accommodations desired in view of her economic needs, time available for activities within her housing situation, and type of experience desired. Agreements are made for the academic year, and moving from one type of accommodation to another during the year is difficult to arrange.

Residence Halls

Board and room services for men and women are provided in eight buildings known as Helaman Halls and six buildings in Deseret Towers. These buildings form a beautifully designed residence-hall development. The buildings are conveniently grouped around an attractively planned and developed central building. Each residence hall accommodates 234 to 264 students, with two persons sharing each bedroom. In addition, living rooms, study rooms, central shower areas, recreational rooms, adequate laundry and storage facilities, and a head resident apartment are located in each building. These halls provide some of the best student living experiences offered on any university campus. The central building features spacious dining rooms and a snack bar, providing the excellent food service for which BYU is noted. This building also contains beautiful living rooms, recreational areas, administrative offices, and other management facilities such as mail rooms and laundry and dry cleaning pickup stations. The approximate annual rate for these accommodations is \$995. A few single rooms are available at an approximate rate of \$1066.

Apartments and Homes for Married Students

Family accommodations for 612 married couples and their children are provided in housing developments known as Wymount Terrace and Wyview Park. All units in married-students' housing are assigned according to family size.

Wymount Terrace—which includes 24 residence buildings, an administration building, and 3 laundries—consists of 462 apartments. There are 108 one-bedroom units, 60 one-bedroom-study units, 264 two-bedroom units, and 30 three-bedroom units. The monthly rental rates are approximately \$82 for the one-bedroom units, \$88 for the one-bedroom-study units, \$92 for the two-bedroom units, and \$102 for the three-bedroom units. In addition, each family pays for its electricity. Balconies or porches for all apartments open on courtyards. Apartments have an all-tile bathroom, a kitchen with modern appliances, including garbage disposal units, gas ranges, electric refrigerators, and an attractively designed living room.

Wyview Park—which consists of 150 mobile homes and a central building—will accommodate 150 married couples and their children. There are 36 one-bedroom units, 78 two-bedroom units, and 36 three-bedroom units. These

units are rented on the same basis as Wymount Terrace with the same monthly rates as corresponding units in that area. All mobile homes are unfurnished with the exception of refrigerators and stoves.

The Residential Housing Department can assist those who desire to live off campus in finding suitable apartments in the Provo community.

Off-Campus Housing

All students living off campus are required to live in University-approved housing. The Off-Campus Housing Department of the Office of Student Housing maintains up-to-date listings of approved residences. This office is established to assist students upon their arrival in Provo to find suitable quarters if they desire to reside in the community.

Off-Campus housing consists of apartments, rooms with kitchen privileges, board-and-room residences, and sleeping rooms located in homes in the community. These facilities are inspected by University representatives to see that they comply with established standards before they are approved for student occupancy. Through the cooperative efforts of landlords and the University, constructive action has been taken to raise the standard of student housing throughout the community. Before making any commitments for residential housing, students should be sure that the place in which they contemplate living has been approved by the University.

A student planning to reside in the community should expect to sign a rental agreement form. He should be prepared to live by the terms of this agreement once it has been signed, and a copy should be returned to the Office of Student Housing. Misunderstanding and financial loss can be avoided if the student will read and familiarize himself with the terms of the rental agreement form before signing it.

Rates

Rates for residential housing accommodations vary with the type of service provided; consequently, only a general indication can be given here. Sleeping rooms rent from \$30 to \$45 per month. Apartment accommodations run from \$40 to \$90 per month per student. Apartments for married students can be obtained at a rate of approximately \$85 to \$175 per month.

Time of Arrival

Residence halls are not open to a student prior to the announced opening date, usually the day before freshman orientation. The University does not advise a student who is going to live in campus housing to arrive before that date.

Food Services

As a convenience to students and faculty members, the University provides food services at very reasonable prices through several different operations: ceterias, snack bars, vending machines, concessions, catering, a dairy products outlet, and a bakery.

Residence hall ceterias located at Deseret Towers and Helaman Halls provide regular meal service for both residents and students living off campus who purchase meal tickets. Another cafeteria is located in the Wilkinson Center, where meals may be purchased with cash or with reduced-rate scrip books. Excellent food at slightly higher prices is available in the Skyroom on the sixth floor of the Wilkinson Center.

Snack bars are located at Deseret Towers, Helaman Halls, and the Wilkinson Center, providing food service throughout the day. Vending machines are located at various places on campus.

In addition, the University operates a dairy products laboratory where milk, ice cream, cheese, and other products may be obtained. This facility is also an outlet for products from the bakery.

List of Courses

General

Students should consult the class schedule for specific information concerning semesters or terms in which classes are offered, except as specially noted.

Semester System

Courses of study at Brigham Young University are offered and credit for satisfactory completion is granted on a semester basis.

Course Numbering System

Course Number	Type of Course
500 to 599	Graduate courses open also to advanced undergraduate students
600 to 799	Graduate students only

Credit-Hour Designation

The three-number code which appears in parentheses immediately after each course title has the following significance:

First number:	Semester hours of credit
Second number:	Class hours of lecture, recitation, or seminar meeting per week or— Minimum hours of individual study required per week
Third number:	Laboratory hours required per week or— Hours of field study or individual research per week

Abbreviations and Symbols

The following abbreviations and symbols are used in the List of Courses section:

- Arr. Class or laboratory hours to be arranged
ea. Credit-hour designation applies to each course number listed
☐ Course originating in one department which may count for credit in another department
R Course which may be repeated for credit

Cross-referencing of Courses

Each course is listed completely only once in the catalog. If the course may count in another department, it is listed in abbreviated form in that department and is preceded by a special symbol, ☐.

Graduate Courses

No D credit can apply toward a graduate degree. Neither lower-division nor correspondence credit can be applied toward a graduate degree.

Reservation of Right to Change Courses

The University makes every effort to ensure the accuracy of the contents of this catalog but reserves the right to eliminate, discontinue, or add courses at any time.

Accounting

Consult the Graduate School of Management section, page 21.

Agriculture

The graduate program in agriculture offers a Master of Science degree in agribusiness, agronomy, animal science, horticulture, and any combination of these fields. These fields and their respective requirements are listed below.

Agribusiness (Agricultural Economics)

Professors. Carpenter, Corbridge, Fuhrman, Infanger.
Associate Professor. Wood (chairman, 475 WIDB).

Entrance Examination Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. An undergraduate degree in any field of agriculture, food science, or closely related field, including the following classes or their equivalent:

Ag. Econ. 112; Acctg. 201, 202; Math. 110R and Acctg. 232; Stat. 221; Comput. Sci. 131 or 133.

Requirements. A minimum of 30 semester hours; a supervised special project including a scholarly project report; a final oral examination.

This program is designed primarily as a terminal degree for students who want to obtain a more adequate practical working knowledge of economic and business principles as they apply to agribusiness enterprises.

Required Courses. As designated by committee.

Courses

- ☐ **Statistics 501, 502.** Statistics for Research Workers I, 2. {5:4:3}

520. (Ag. Econ.-An. Sci.-Bot.) Management of Ranch Resources. (3:2:2) Prerequisite: consent of instructor. Corbridge, Shumway, Wallentine

Team taught. Commercial ranch case study. Management plan developed, consisting of maximum profit practices and enterprise combinations.

521. (Ag.Econ.-AgHrt.) Management of Cropland Resources. (3:3:0) Prerequisite: consent of instructor. Corbridge, Robison

Team taught. Commercial farm case study. Management plan developed, consisting of maximum profit practices and enterprise combinations.

□ **Animal Science 525. Plant Operations.**

570R. Advanced Topics. (1-3:1-3:0 ea.) Prerequisite: consent of instructor.

Topics in finance, marketing, policy, and economic theory.

575R. Research Methods and Reporting. (1-3:Arr.:Arr. ea.) Prerequisite: consent of instructor.

Principles of research methodology; application of research tools and presentation of research results. Requires an acceptable written report.

595R. Readings and Conferences. (1-3:Arr.:Arr. ea.)

597R. Individual Research. (1-3:Arr.:Arr. ea.)

Agronomy and Horticulture

Professors. Allred, Farnsworth, Laws (graduate coordinator, 271 WIDB), Robison (chairman, 275 WIDB).
Assistant Professors. Nelson, Williams.

Program. Master of Science (M.S.).

Entrance Examination Required. A written, comprehensive examination on undergraduate work, normally given during the first week after registration as a graduate student.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. Undergraduate major in the field or the equivalent.

Minors Permissible. Statistics, computer science, botany, mathematics, or physics; Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses. Stat. 501, 502; AgHrt. 694R, two semesters.

Courses

511. Soil Physics. (3:2:3) Prerequisites: AgHrt. 282; Math. 101 or 105; one semester inorganic chemistry (102 or higher). Laws

Physical properties of soils and their effects upon air, water, and temperature in relation to soil management and crop production.

514. Soil Microbiology. (3:2:3) Prerequisites: AgHrt. 282, Chem. 252, Micro. 331.

Ecology and role of soil microorganisms in soil fertility; decomposition of organic matter and waste materials; degradation of pesticides and other agricultural chemicals.

520. Chemistry and Management of Arid Zone Soils. (3:2:3) Prerequisites: AgHrt. 302, 305. Nelson
Physical and chemical properties of saline and alkali

soils—their diagnosis, reclamation, and management for crop production.

521. (AgHrt.-Ag. Econ.) Management of Cropland Resources. (3:3:0) Prerequisite: consent of instructor.

540. Advanced Crop Production. (3:3:0) Prerequisites: AgHrt. 151, 305, 559; Bot. 440.

Basic concepts in plant-soil-climatic relationships, with emphasis on recent advances in crop culture and management.

550. Advanced Horticulture. (3:3:0) Prerequisites: AgHrt. 318 or 340 or 351, and 352; Bot. 440. Williams

Fundamental principles relating to horticultural practices and physiological development.

559. Plant Breeding. (2:2:0) Prerequisites: AgHrt. 151 or equivalent; Bot. 372. Robison

Principles of genetics and methods of plant breeding applied to the improvement of agronomic and horticultural crops.

560. Soil and Plant Analysis. (2:0:6) Prerequisites: AgHrt. 305; Chem. 223. Laws

Laboratory chemical analysis of soils and plant materials in soil and plant research.

598R. Conferences and Reports. (1-2:1-2:0 ea.) Prerequisite: consent of instructor. Laws

694R. Seminar (1:1:0 ea.) Laws

697R. Research. (Arr. ea.)

699R. Thesis for Master's Degree. (Arr.)

Animal Science

Professors. Cannon (emeritus), Gardner, Hoopes, Orme (chairman, 375 WIDB), Park, Shumway, Wallentine.

Assistant Professors. Johnston, Smith.

Program. Master of Science (MS).

Entrance Examinations Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisite. A bachelor's degree in animal science (20 semester credit hours) or closely related field and 30 semester hours in biological, mathematical and physical sciences.

Minors Permissible. Agribusiness, agronomy and horticulture, botany, chemistry, computer science, microbiology, statistics, or zoology.

Requirements. Minimum of 24 semester hours plus thesis (6-hour min.).

Required Courses. Engl. 316; Stat. 501; An. Sci. 462 or 515, 507, 692R (each semester).

Courses

□ **Statistics 501. Statistics for Research Workers I.** (5:4:3)

462. Reproductive Physiology of Domestic Animals. (3:2:2) Smith

507. Animal Nutrition. (3:3:0) Prerequisites: An. Sci. 207; Chem. 252 or equivalent. Recommended: Chem. 281. Gardner

Functions of nutrients in metabolism, measuring feed values, assessing nutrient requirements.

508. Animal Nutrition Laboratory. (2:0:6) Prerequisite: completion of or concurrent registration in An. Sci. 507. Gardner

Sampling methods, chemical analysis of feeds and blood, digestion trials, classical nutritional deficiencies, and research techniques.

515. Genetics of Livestock Improvement. (3:3:0) Prerequisites: Bot. 370; Stat. 221 or equivalent. Park

Application of genetic principles for livestock improvement. Emphasis on selection methods and mating systems.

520. (Agr. Econ.—An. Sci.—Bot.) Management of Ranch Resources. (3:2:2) Prerequisite: consent of instructor.

Team taught. Commercial ranch case study. Management plan developed, consisting of maximum profit practices and enterprise combinations.

525. Plant Operations. (2-5:Arr.: Arr.) Prerequisite: consent of instructor. Johnston

☐ Statistics 531. Experimental Design. (3:3:0)

☐ Statistics 536. Regression Analysis. (3:3:0)

560. Advanced Dairy Production. (3:3:0) Gardner

Includes the physiology and biochemistry of lactation, genetic improvement, dairy layout design, disease control, nutritional requirements. Offered 1977 and alternate years.

591R. Selected Topics in Animal Science. (1½-2:Arr.:0 ea.)

595R. Special Problems in Animal Science. (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.

692R. Seminar. (1:2:0 ea.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

Anthropology and Archaeology

Professors. Christensen, Myers (chairman, 150 MSRB).

Associate Professors. Berge (graduate coordinator, 136 MSRB), Matheny.

Program. Master of Arts (M.A.) in archaeology only.

Examination. A qualifying examination must be taken by September 30 for students entering the program Fall Semester and by January 31 for students entering Winter Semester unless this examination has already been taken at the end of the senior year by students entering the Graduate School from the undergraduate program at Brigham Young University.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Fall and Winter semesters only.

Master of Arts

Prerequisite. Undergraduate major in archaeology or equivalent.

Fields. Historic archaeology; prehistoric archaeology.

Minors Permissible. Any established minor in the humanities or the sciences; Option II.

Requirements. Minimum of 15 semester hours in archaeology and a minor, plus the thesis (6-hr. min.—699); foreign language proficiency when essential to the student's field of research; and a comprehensive examination prior to undertaking thesis research.

Required Courses. Archaeol. 580R; 590R; at least one of the following area courses: 515, 545, 555; and 455R or comparable field experience.

This department is affiliated with the BYU-New World

Archaeological Foundation, which affords some graduate students field experience in Mesoamerica.

The program is designed to prepare students for study toward the Ph.D. degree and a professional career in archaeology.

Courses

515. Advanced Southwestern Archaeology. (3:2:2)

545. Advanced Near-Eastern and Mediterranean Archaeology. (3:2:2)

555. Advanced Mesoamerican Archaeology. (3:2:2)

570. Advanced Museology. (3:1:4)

580R. Theory and Research Design. (3:3:0 ea.) Prerequisite: consent of instructor.

590R. Seminar. (2:2:0 ea.)

610. Classification of Material Culture. (3:2:4)

671. Advanced Interpretive Methods. (2:2:2)

695R. Library Research. (2:0:6 ea.)

696R. Museum Studies. (2:0:6 ea.)

697R. Field Research. (1-10:0:9-30 ea.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

Art and Design

Professors. Breinholt (graduate coordinator, F-553 HFAC), Darais, Gunn, Magleby, Turner, Weaver, Wilson.

Associate Professors. Burnside, Johansen, Myer, Stout (chairman, B-509 HFAC), Tippetts.

Programs. Master of Arts (M.A.), Master of Fine Arts (MFA). Applicants should note the differences between the Master of Arts degree and the Master of Fine Arts degree. Applicants for admission to the Master of Fine Arts degree program must submit a portfolio of their art work. This should be deposited with the Art and Design Department no later than the application deadlines listed below. Slides will be acceptable for heavy or bulky works.

Entrance Examination Required. Interview with a committee of the graduate faculty during registration.

Application Consideration Dates. April 1 for Spring and Summer terms and Fall Semester, November 1 for Winter Semester.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Undergraduate major in art or its equivalent; proficiency in basic drawing and design fundamentals in two-dimensional and three-dimensional work; at least 20 semester hours of upper-division work, including 7 semester hours in art history.

Areas. Design, painting, and sculpture.

Minors Permissible. One of the above areas may be selected as a minor.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.). At least 15 semester hours, exclusive of thesis, must be in one of the fields listed above and at least 9 semester hours in a minor field.

Required Courses. 4 semester hours in ArtDs. 600R. The Master of Arts degree is intended to stress the academic thrust of art.

Master of Fine Arts

Prerequisites. Undergraduate major in art or its equivalent; proficiency in basic drawing and design fundamentals in two-dimensional and three-dimensional work; and at least 20 semester hours of upper-division work, including 7 semester hours in art history.

Areas. Design (ceramics, crafts, commercial art, printmaking), painting and sculpture.

Minors. See below.

Requirements. Minimum of 36 semester hours in one of the two areas above, including a minimum of 6 semester hours of MFA project (ArtDs. 697R) and 4 semester hours of advanced design (ArtDs. 620R); minimum of 12 semester hours in the alternate area (this constitutes the only permissible minor for the MFA degree); minimum of 4 semester hours of graduate level art history. Total hours: 52. Also required are a one-man show of materials produced in this program during the third semester and the public exhibition of the candidate's MFA terminal project. This performance degree must be completed in residence.

Before beginning the fourth semester of his program, the candidate will submit plans to the graduate art faculty for a terminal project of a work or works of art created by the candidate. To be acceptable it must represent a professional level of quality. It may be retained by Brigham Young University as part of its permanent collection.

Although a research thesis is not required, an orderly record will be submitted in which the MFA candidate traces, by means of personal statements, photographs, transcripts, news clippings, correspondence, etc., his artistic development during his time in this program. It will also include an illustrated account of his production of the MFA terminal project described above.

Courses

500. Philosophy of the Fine Arts. (2:2:0) Recommended: Phil. 213 and any of the art appreciation classes, or Hum. 101.

Lecture and seminar for majors in fine arts.

518. Architectural Mural Media. (2:2:2) Prerequisites: ArtDs. 227, 320, 321 or 322.

Historical backgrounds; studio work in design; execution of murals.

578R. Art Education Studio. (1-3:1:5 ea.)

Curricula and projects in art education.

595R. Seminar. (1:0:2 ea.)

Student and faculty analysis of curricula relationships; projection of student objectives; contemporary topics; visits to current exhibits.

600R. Individual Study in Art History. (2:8:Arr.:Arr. ea.)

Allows graduate study in depth into any chosen historical art era.

618R. Advanced Architectural Mural Media. (2:8:Arr.:Arr. ea.)

620R. Advanced Design. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 420R.

621R. Advanced Drawing. (2:2:2 ea.)

622R. Advanced Figure Drawing. (4:4:4 ea.) Prerequisite: ArtDs. 621R.

627R. Advanced Painting. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 427R.

633R. Advanced Watercolor. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 433R.

636R. Advanced Industrial Design. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 436R.

641R. Advanced Graphic Design. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 441R.

650R. Advanced Printmaking. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 450R.

656R. Advanced Sculpture. (2:8:Arr.:Arr. ea.) Prerequisites: ArtDs. 456R, 458R.

659R. Advanced Ceramics. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 459R.

661R. Advanced Crafts and Advanced Metal. (2:8:Arr.:Arr. ea.) Prerequisite: ArtDs. 461R.

677R. Survey of Recent Studies in Art Education. (2:2:0 ea.)

679. Advanced Arts and Crafts for Elementary Teachers. (2:2:1) Prerequisite: consent of instructor.

690. Color. (2:2:0)

697R. MFA Project for Master's Degree. (2:8:Arr.:Arr. ea.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

Asian Studies

Professors. Farnsworth, Hillam, Hyer, Palmer.

Associate Professors. Britsch, Horiuchi (Coordinator, 121 FOB), Williams.

Assistant Professor. Montgomery.

Program. Master of Arts (M.A.).

Entrance Examination Required. None.

Application Consideration Date. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Proficiency in one Asian language; strong undergraduate preparation in Asian Studies.

Field. Asian Studies.

Minors Permissible. Any approved minor.

Requirements. The Master of Arts candidate will—

1. Complete a major in one of the departments of the University (all departmental requirements must be fulfilled for the major).
2. Complete at least 15 hours in approved Asian area courses at the graduate level from areas other than the department major, including two seminars in the Asian area.
3. Write a thesis on an Asian subject that is acceptable to both majors (for example, a student in history would write his thesis on Asian history).

Courses

Economics

535R. Economic Problems of Asia. (3 ea.)

History

640R. Problems of Asian History. (3 ea.)

648R. Asian Thought and Culture. (3 ea.)

690R. Graduate Seminar in History (Asia). (1-3 ea.)

Political Science

501R. Advanced Topics. (3 ea.) (when taken in conjunction with an Asian class)

505R. Asian Political Thought. (3 ea.)

695R. Seminar in Comparative Government and Politics. (1-3 ea.)

697R. Seminar in International Relations (Asia). (1-3 ea.)

Religion

555. Comparative World Religions (Asian). (2)
 556. Comparative World Religions (Asian). (2)
 559. The Church in Asia. (2)
 659R. Seminar in History of Asian Religion. (1-6 ea.)

UNDERGRADUATE (Upper-division)**Anthropology**

350. Peoples of South and East Asia. (3)

Art and Design

302. Oriental Art. (2)

Asian Studies

499. Senior Seminar in Asian Studies. (3)

Classical Civilization

342. Oriental Mythology. (2)

Economics

330. Economic Development. (3)

Geography

470. Asia. (3)

History

340. Premodern Asia. (3)
 341. Modern Asia. (3)
 342. Korea. (3)
 343. Formative Period of Chinese Civilization. (3)
 344. Modern China. (3)
 345. Premodern Japan. (3)
 346. Modern Japan. (3)
 347. India. (3)
 348. Southeast Asia. (3)
 349. Asiatic Russia. (3)
 440. Communist China. (3)
 445. History of Asian Religions and Thought. (3)

Chinese (Mandarin)

301. Intermediate Modern Chinese 2. (4)
 311. Third-Year Conversation. (2)
 321, 322. Selected Readings and Composition. (3 ea.)
 342R. Chinese Literature in Translation. (3)
 441, 442. Classical and Documentary Chinese. (4 ea.)
 443. Modern Chinese Literature. (4)
 444. Readings in Chinese Social Sciences. (4)
 445. Chinese Civilization. (3)
 490R. Individual Study in Chinese. (1-3 ea.)
 495. Senior Seminar for Majors. (2)

Japanese

301. Third-Year Japanese. (4)
 311. Third-Year Conversation. (2)
 321. Selected Readings and Composition. (3)
 322. Selected Readings and Composition. (3)
 443, 444. Modern Japanese Literature. (3 ea.)
 490R. Individual Study in Japanese. (1-3 ea.)

Political Science

- 350R. Communist and Totalitarian Government and Politics. (3 ea.) (When topic deals with Asia.)
 351R. Parliamentary Government and Politics. (3 ea.)
 352R. Third-World Government and Politics. (3 ea.) (When topic deals with Asia.)
 359R. Topics in Comparative Government and Politics. (3 ea.) (When topic deals with Asia.)
 377R. Foreign Relations. (3 ea.) (When topic deals with Asia.)
 379R. Topics in International Relations. (3 ea.) (When topic deals with Asia.)

Religion

- 453A. Mormonism and the World's Religions. (2)

Associate Professors. Rushforth, Smith, Whitton (graduate coordinator 495 WIDB.)

Assistant Professors. Brotherson, Wood.

Collaborators. Frischknecht, Holmgren, McArthur, Nelson, Plummer, Ware, Welch.

Programs. Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required. (1) Graduate Record Exam (GRE), including the aptitude test and the advanced examination in biological sciences; (2) a written diagnostic examination on undergraduate work, normally given during the first month after registration as a graduate student.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. Students working toward a graduate degree in botany should have a basic understanding of general botany, cytology, anatomy, taxonomy, genetics, morphology, physiology, and ecology. Students working toward a graduate degree in range science should have a basic understanding of general botany, taxonomy, genetics, physiology, ecology, range management, range analysis, and animal nutrition and management. They will be examined in each of these subject areas in a written diagnostic examination. They should also have training in mathematics, chemistry, physics, microbiology, soils, and zoology adequate for advanced study in areas of specialization. Where deficiencies exist, provision must be made for correcting them.

Fields. Biological science education, botany, genetics, range science.

Minors Permissible. Any established minor in the sciences, Option I or II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.). (Consult graduate coordinator for modified requirements in biological science education.)

Required Courses. Graduate seminars during semesters in residence.

Doctor of Philosophy Degree in Botany

Prerequisites. A master's degree in botany or the equivalent.

Fields. Botany, genetics.

Minors Permissible. Any established minor in the biological or physical sciences, or others by approval of the department.

Requirements. Minimum of 30 semester hours of course work approved by the student's graduate committee plus dissertation (18-hr. min.). Compliance with University language and tool requirements.

Option I. A major and minor field within the department plus a minor field outside the department. The number of hours in each will depend upon the background, interests, and competence of the student.

Option II. A major field within the department with a program of supporting courses plus a minor field outside the department. The number of hours in the major and minor fields will depend upon the background and competence of the student.

Required Courses. Graduate seminars, during semesters in residence.

Botany and Range Science

Professors. Andersen, Harper (chairman, 499 WIDB), Hess, Moore, Murdock, Stutz, Tidwell, Valentine, Weber, Welsh.

Botany

Courses

501. Histological Technique. (2:0:6) Prerequisite: Bot. 101 or Zool. 105. Moore
Techniques of preparing plant tissues for microscopic examination. Offered 1977-78 and alternate years.

510. Advanced Taxonomy. (3:2:3) (One three-day field trip to be arranged.) Prerequisites: Bot. 210 or consent of instructor. Welsh

515. Agrostology: Taxonomy and Ecology of Grasses. (3:2:4) Prerequisite: Bot 210. Brotherson, Wood
Classification and ecology of grasses. Important forage species are emphasized. Offered 1976-77 and alternate years.

522. Biological Instrumentation. (3:1:6) Prerequisite: permission of instructor. Weber
Theory and application of research instruments to biological problems.

526. (Bot.-Zool.) Cell Biology (4:3:3) Prerequisites: Introductory course in biochemistry. Staff
Molecular physiology and ultrastructure of cells, with emphasis on eucaryotic organisms.

533. Algology. (3:2:3) Prerequisite: Bot. 331 or consent of instructor. Rushforth
A detailed study of the algae, including classification and morphology.

535. Advanced Mycology. (4:2:6) Prerequisite: Bot. 335 or equivalent. Weber
A detailed study of taxonomy and morphology of special groups. Offered 1977-78 and alternate years.

539. Paleobotany. (3:2:3) Prerequisites: Bot. 101 or 105; Geol. 103. Tidwell

550. North American Floristic Elements (3:2:3) Welsh
The distribution of plant species and communities in the light of present and past climates. Offered 1977-78 and alternate years.

551. Quantitative Ecology. (3:3:0) Prerequisite: Bot.-Zool. 350 or Bot. 453; Stat. 221 or 501. Harper
Methods used in community analysis.

552. (Bot.-Zool.) Terrestrial Ecosystems. (4:3:Arr.) Prerequisites: Bot.-Zool. 350, Stat. 221 or 501. Harper, Murdock

Biotic communities of the earth; population dynamics; reproductive, life-form, and longevity patterns; species interactions; and structure, dynamics, and evolution of communities. Extended field trip.

555. (Bot.-Zool.) Aquatic Ecosystems (3:2:3) Prerequisites: Bot.-Zool. 350 or equivalent; Stat. 221 or 501. Welsh
Analysis of lake and stream ecosystems. Three Saturday field trips. One extended field trip.

573. Cytogenetics. (3:2:3) Prerequisites: genetics and cytology. Anderson, Stutz
Offered 1976-77 and alternate years.

574. Population Genetics. (3:3:0) Prerequisite: genetics and consent of instructor. Staff
Offered 1977-78 and alternate years.

610. Botanical Terminology and Nomenclature. (2:2:0) Prerequisite: consent of instructor. Welsh
A detailed study of botanical terminology, including the contributions of Latin and Greek words, their gender, number, and case. Offered 1976-77 and alternate years.

621. Electron Microscopy. (2:2:0) Hess
Theoretical and practical electron microscopy of biological material.

622. Electron Microscopy Laboratory. (1:0:3) Prerequisites: consent of instructor and completion of or concurrent registration in Bot. 621. Hess

Laboratory to accompany Bot. 621. Essentially individual instruction.

630. Angiosperm Morphology. (4:3:3) Prerequisite: familiarity with taxonomy, anatomy, and physiology or biochemistry. Tidwell
Offered 1976-77 and alternate years.

634. Morphogenesis. (3:2:3) Prerequisites: familiarity with taxonomy, anatomy, and physiology or biochemistry. Moore

The development of form in organisms. Offered 1977-78 and alternate years.

638. Genetics of the Fungi. (2:2:0) Prerequisite: a laboratory course in microbiology, botany, or zoology. Andersen

Offered 1976-77 and alternate years.

641. Physiology of Fungi and Algae. (4:3:3) Prerequisites: Bot. 335 and 440. Weber
Offered 1977-78 and alternate years.

650R. Advanced Topics in Plant Ecology. (2:2:0 ea.) Staff
Current trends in ecological research and philosophy.

678. Organic Evolution. (3:3:0) Prerequisite: genetics or consent of instructor. Stutz

691R. Graduate Seminar. (1:1:0 ea.)

698R. Special Problems. (1:3:0:3-9 ea.)

699R. Thesis for Master's Degree. (Arr.)

740R. Advanced Topics in Plant Physiology. (3:2:3 ea.) Prerequisites: Bot. 440; Chem. 351. Smith

742. Plant Nutrition and Growth. (3:2:3) Prerequisite: Bot. 440. Smith
Offered 1976-77 and alternate years.

799R. Doctoral Dissertation. (Arr.)

Range Science

Courses

520. (Bot.-Ag. Econ.-An. Sci.) Management of Ranch Resources. (3:2:2) Prerequisite: consent of instructor. Shumway, Corbridge, Vallentine
Team taught.

Commercial ranch case study. Management plan developed, consisting of maximum profit practices and enterprise combinations.

561. Watershed Management. (3:2:3) Harper, Murdock

691R. Graduate Seminar. (1:1:0 ea.)

698R. Special Problems. (1:3:0:3-9 ea.)

699R. Thesis for Master's Degree (Arr.)

Business Education

Professors. Bell (graduate coordinator, 353 JKB), D. Peterson, Waters.

Associate Professors. Nelson (chairman, 351 JKB), Perry, B. Petersen, G. Smith, H. Smith, Stoddard.

Assistant Professors: Ashby, Baker, Boyer.

Programs. Master of Science (M.S.), Doctor of Education (Ed.D.).

Entrance Examination Required. None for master's program; Graduate Record Examination and Miller Analogies Test for doctoral program.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. Bus. Ed. 320 or equivalent. Background in statistics.

Fields. Business education.

Minors Permissible. Any approved minor.

Requirements

Option I: Minimum of 24 semester hours plus thesis (6-hr. min.).

Option II: Minimum of 38 semester hours (no thesis).

Required Courses

Option I: Bus. Ed. 605, 625, and 3 hours of 515R.

Option II: Bus. Ed. 605, 625, 635, and 3 hours of 515R.

This program is designed to prepare business teachers for junior colleges and other postsecondary institutions and to improve instruction for secondary school business teachers.

Doctor of Education

Prerequisites. Master's degree; one year of professional teaching experience; background work in mathematics, statistics, computer science, and College of Business common body of knowledge requirements.

Field. Business education.

Minors. None required.

Requirements. Acquisition of professional and academic competencies in teaching excellence, research, supervision and administration, and designated subject fields in business education.

Required Courses. Bus. Ed. 790R (doctoral seminars); Bus. Ed. 799 (doctoral dissertation); additional course work as determined by advisory committee.

Courses

515R. Methods of Instruction in Business Education. (2:3:Arr.:Arr. ea.)

An analysis of classroom methods, psychology of learning, and research findings pertaining to improvement of instruction in any of the following areas: typewriting, shorthand, bookkeeping, economic education, and distributive and cooperative education.

530. Current Developments Influencing the Curriculum and Content of Business Education. (2:2:0)

A study of recent technological developments, such as automation in business, and an analysis of the content, materials, and procedures of business education.

590R. Seminar in Business Education. (1-2:Arr.:Arr. ea.)

An intensive clinic emphasizing teaching methodology in one or more selected topics in business education.

605. Introduction to Research in Business Education. (3:3:0)

An examination of research methods and procedures applicable to business education, with emphasis on the analysis and evaluation of methodology reflected in existing research.

625. Testing and Evaluation in Business Education. (3:3:0) Prerequisite: Stat. 221 or equivalent.

A survey of classroom tests and instruments of evaluation used in business education, and an analysis of their uses and methods of construction.

635. Implications of Research for Improved Classroom Instruction. (3:3:0)

Review and analysis of recent research in business education, and evaluation of its implications for improved classroom instruction.

692. Research Project. (1-4:Arr.:Arr.)

694. Independent Readings. (1-2:1-2:0)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

790R. Doctoral Seminar. (Arr.)

Forum for interchanges among faculty and doctoral students that will contribute to the acquisition of professional competencies prescribed by major department and advisory committee.

799R. Dissertation. (Arr.)

Business Management

Consult the Graduate School of Management section, page 21.

Chemistry

Distinguished Professor. Hall.

Professors. Anderson, Bills, Blackham, Bradshaw, Broadbent, Bryner (emeritus), Butler (chairman, 226 ESC), Castle, Cluff, Goates, Gubler, Hawkins, Izatt, Mangum, Nelson, Ott, Smith, Snow, Swensen, Vernon, White (biochemistry coordinator, 695 WIDB), Wilson.

Associate Professors. Dalley, Hansen, Mangelson, Nordmeyer, Paul, Thorne (graduate coordinator, 116 ESC), Woolley.

Programs. Master of Science (M.S.), Master of Arts (M.A.-3 Program), Doctor of Philosophy (Ph.D.).

Entrance Examination Required. A written examination of the student's undergraduate preparation in chemistry, given during the week preceding his initial registration.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Teaching. The Chemistry Department relies upon its graduate students for many assignments in laboratory and recitation instruction. Unless a student is excused by the faculty he will be expected to teach a cumulative total of at least two semesters at 20 hours a week during his residency toward the doctoral degree, half of which must come after his first year in residency. Master's degree candidates are expected to teach half this amount.

Master of Science

Prerequisite. Undergraduate major in chemistry or the equivalent. Proficiency in French, German, or Russian; or in mathematics beyond calculus; or in computer science.

Fields. Analytical-physical chemistry; biochemistry (see Graduate Section of Biochemistry); inorganic chemistry; organic chemistry; physical chemistry.

Minors Permissible. Option I or Option II.

Requirements. 24 semester hours plus a thesis (6-hr. min.—699R).

Required Courses: As specified by committee.

Master of Arts

(M.A.-3 Program)

Prerequisite. Undergraduate major in chemistry or the equivalent.

Requirements. The department offers the three-year master's degree program wherein the student wishing to prepare for high school or junior college teaching may ob-

tain the Master of Arts degree in chemistry. This program will normally begin at the end of the student's sophomore year. Details may be obtained from the chairman of the Chemistry Department.

Field. Chemistry teaching.

Doctor of Philosophy

Prerequisites. Baccalaureate degree in chemistry or the equivalent. Proficiency in French, German, or Russian; or in mathematics beyond calculus; or in computer science.

Fields. Analytical-physical chemistry; biochemistry (see Graduate Section of Biochemistry); inorganic chemistry; organic chemistry; physical chemistry.

Minors Permissible. Any approved minor.

Requirements. Approved courses plus a dissertation (18-hr. min.—799R).

Graduate Section of Biochemistry

Professors. Gubler, Mangum, Smith, Swensen, Vernon, White (chairman and graduate coordinator, 695 WIDB).

Graduate degrees in biochemistry are administered by the biochemistry faculty of the Chemistry Department. Qualified faculty in other departments may (with approval of the graduate dean) become active members of the graduate section of biochemistry and serve as members or chairmen of graduate advisory committees.

Programs. Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required. Students are accepted on a provisional basis until: (1) completion of the written appraisal examinations designed to evaluate their competence in undergraduate chemistry and (2) successful removal of deficiencies revealed by this examination. The examination is administered by the graduate section of biochemistry the week preceding initial registration.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Teaching. Students will be expected to teach a cumulative total of at least two semesters at 20 hours per week.

Master of Science

Prerequisite. Baccalaureate degree in physical, biological, or agricultural sciences from an accredited college or university. Students with bachelor's degrees in fields other than chemistry should have successfully completed one-year courses in organic and in physical chemistry.

Fields. Biochemistry.

Minors Permissible. Any established minor in the physical, biological, agricultural, or food sciences; Option II.

Requirements. Courses (24-semester-hr. min.), thesis (6-hr. min.—699R), annual progress review, and final oral examination, all approved by graduate advisory committee.

The final oral examination for the M.S. will consist of two parts: (1) a public presentation of the candidate's original research described in his thesis and (2) a comprehensive examination on course work, research, and thesis, administered by the graduate advisory committee.

Required Courses. Chem. 694R (every semester in residence), 685, 686, and 687.

Doctor of Philosophy

Prerequisite. Baccalaureate degree in physical, biological, or agricultural sciences from an accredited college or university. Students with bachelor's degrees in fields other than chemistry should have successfully completed one-year courses in organic and in physical chemistry.

Fields. Biochemistry.

Minors Permissible. Any established minor in the physical, biological, agricultural, or food sciences, or combination thereof.

Requirements. Courses, research, annual progress review, oral proposition, comprehensive examination, and dissertation (18-hr. min.—799R), all approved by graduate advisory committee.

The oral examination on the dissertation consists of two parts: (1) a public presentation of candidate's original research described in his dissertation and (2) an oral examination, primarily on the dissertation.

Required Courses. Chem. 694R (every semester in residence), 685, 686, and 687.

Courses

501. Symmetry in Chemistry. (2:2:0)

514. Inorganic Chemistry. (3:3:0)

518. Inorganic Syntheses. (2:0:6)

Offered 1977-78 and alternate years.

521. Analytical Chemistry. (2:2:0) Prerequisite: Chem. 464.

522. Chemical Instrumentation. (2:0:6)

523. Instrumental Analysis. (2:1:3) Prerequisite: completion of or concurrent registration in Chem. 464.

551. Systematic Identification of Organic Compounds. (3:4:2:3-6)

552. Advanced Organic Chemistry. (3:3:0)

561. Chemical Thermodynamics. (3:3:0) Prerequisite: Chem. 462.

562. Advanced Chemical Thermodynamics. (2:2:0) Prerequisite: Chem. 561.

Offered 1977-78 and alternate years.

563. Reaction Kinetics. (2:2:0)

564. Nuclear and Radiochemistry. (2:2:0) Prerequisite: Chem. 462.

Offered 1976-77 and alternate years.

565. Introduction to Quantum Chemistry. (3:3:0) Prerequisite: Chem 462.

594R. General Seminar. (1:1:0 ea.) Required every semester in residence of all senior ACS-approved majors and graduate students in chemistry.

598R. Special Problems. (Arr.) Registration by permission.

600. Directed Teaching in Chemistry. (1:1:0)

601. Geometry of Atoms and Molecules. (2:2:0) Prerequisite: Chem. 501.

Offered Fall 1976 and Winter 1978.

611. Chemistry of Main Group Elements. (3:3:0)

Offered 1977-78 and alternate years.

612. Chemistry of Transitional Elements. (3:3:0)

Offered 1976-77 and alternate years.

658. Organic Synthesis. (3:1:6)

Offered every third semester; Winter Semester 1977.

685, 686. Advanced Biochemistry. (3:3:0 ea.)

687. Advanced Biochemistry Laboratory. (2:0:6)**694R. Biochemistry Seminar.** (1:1:0 ea.)

Weekly seminar on current topics given by invited guests and by BYU faculty and graduate students. Required of all graduate students in biochemistry every semester in residence.

697R. Master's Candidate Research. (Arr.)**699R. Thesis for Master's Degree.** (6-9:Arr.:Arr.)**719. Selected Topics in Inorganic Chemistry.** (1-3:1-3:0)**729. Selected Topics in Analytical Chemistry.** (1-3:1-3:0)**751. Mechanisms of Organic Reactions.** (3:3:0)

Offered Winter 1977 and Fall 1978.

757. Chemistry of Natural Products. (3:3:0)

Offered 1976-77 and alternate years.

758. Heterocyclic Compounds. (3:3:0)

Offered 1977-78 and alternate years.

759. Selected Topics in Organic Chemistry. (1-3:1-3:0)**761. Statistical Mechanics.** (3:3:0)

Offered 1976-77 and alternate years.

765. Quantum Chemistry. (3:3:0) Prerequisite: Chem.

565. Recommended: Chem. 501.

Offered 1977-78 and alternate years.

769. Selected Topics in Physical Chemistry. (1-3:1-3:0)**789. Selected Topics in Biochemistry.** (1-3:1-3:0)**797R. Doctoral Candidate Research.** (Arr.)**799R. Dissertation for the Ph.D. Degree.** (Arr.)

Child Development and Family Relationships

Professors. Burr, Cannon, Knowles, Moss (chairman, 1239 SFLC), Porter, Rollins, Stahmann.

Associate Professors. Allred, Bahr, Cahoon, Hoopes, Mead, Olson, Price, Scoresby.

Assistant Professors. Gaibraith, Larsen, McKee, Taylor.

Programs. Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required. An oral evaluation interview with all Ph.D. candidates. When a personal meeting is not feasible, additional written information about the student's background and academic goals will be requested. The MMPI is required of all applicants in the marriage and family counseling area.

Application Consideration Dates. All sections of the application form for the Fall Semester must be in the CDFR Department by March 1. Since the applications have to be processed through University Admissions and the Graduate School before they come to the department, completed applications should be submitted to University Admissions by January 1. Limited availability for Winter Semester may be considered October 15, depending upon enrollment.

Entry Times. Fall and Winter semesters. Background work may be completed during the Spring or Summer terms preceding a Fall Semester entrance.

Master of Science

Prerequisites. An introductory statistics course that includes inferential statistics (i.e., Psych. 370, Sociol. 206, Stat. 221, or Stat. 552 at BYU) and a research methods

course (i.e., Psych. 369 or Sociol. 300). In addition, area prerequisites are—

Family Relationships: CDFR 460 and an upper-division undergraduate course in social psychology or sociological theory.

Child Development: CDFR 410 and an upper-division undergraduate course in personality or learning theory. **Marriage and Family Counseling.** CDFR 410 or 460, or equivalent, and an upper-division undergraduate course in learning theory.

Fields. Child development, family relationships, marriage and family counseling.

Special emphasis in early childhood or family life education is currently available as an Option II program.

Minors Permissible. Any minor approved by the advisory committee, or Option II.

Requirements. Acquire and demonstrate the competence identified for the degree.

Required Courses. As designated by committee.

Doctor of Philosophy

Prerequisites. A master's degree in this or a related field, or the equivalent.

Fields. Child development and family relationships, family studies (see page 67), marriage and family counseling.

Minors Permissible. Any minor approved by the advisory committee.

Requirements. Satisfy University residence identified for the degree; pass a written comprehensive examination; and complete an acceptable dissertation, including enrollment for 18 hours of dissertation credit.

Courses

501R. Workshop in Child Development. (1-2:1-2 wks., 8 hrs./day:0 ea.) Prerequisite: 8 hours in CDFR or consent of department chairman.

Intensive study in the application of principles of child development and child guidance.

502R. Workshop in Family Relationships. (1-2:1-2 wks., 8 hrs./day:0 ea.) Prerequisite: 8 hours in CDFR or consent of department chairman.

Intensive study in the application of principles of family relationships.

503R. Workshop in Marriage and Family Counseling. (1-2:1-2 wks., 8 hrs./day:0 ea.) Prerequisite: 8 hours in CDFR or consent of department chairman.

Intensive study in the application of principles of marriage and family counseling.

514. Theories of Child Development. (3:3:0) Prerequisite: CDFR 410.

An intensive investigation of theoretical frameworks, models, and concepts of dominant contemporary theories in child development.

530. Problems of Teaching Marriage and Family Relationships in College. (2:2:0)

540. Introduction to Theories for Marriage and Family Counseling. (3:3:0) Prerequisite: CDFR 460. Recommended: CDFR 461.

Individual and interpersonal theories of counseling as they pertain to premarital and marital dyads.

555R. Beginning Practicum in Marriage and Family Counseling. (3:2:2-4 ea.) Prerequisites: CDFR 540 and consent of instructor.

Experience in counseling individuals, premarital and marital dyads, and families.

560. Advanced Family Relationships. (3:3:0) Prerequisite: CDFR 460.

Analysis of theories and research about the premarital dyad, marital dyad, and family interaction.

590R. Readings in Child Development and Family Relationships. (1-2:1-2:0 ea.) Prerequisites: CDFR 410 or 460 and consent of instructor.

Discussions and reports of current readings in this field.

595R. Special Topics in Child Development and Family Relationships. (1-2:1-2:0 ea.) Prerequisites: CDFR 410 or 460 and consent of instructor.

Individual study for qualified students majoring in child development and family relationships, upon consultation with the instructor and the department chairman.

596R. Research Methodology. (3:2:2 ea.) Prerequisites: CDFR 410 or 460; Stat. 552 (concurrent registration permitted).

Principles of research methodology applied to the identification, evaluation, creation, and utilization of empirical knowledge in child development-family relationships.

610. Physical and Intellectual Development of Children. (3:3:0) Prerequisite: CDFR 514.

A systematic survey of current theories and research on physical and intellectual development from conception through adolescence.

611. Emotional and Social Development of Children. (3:3:0) Prerequisite: CDFR 514.

A systematic survey of current theories and research on emotional and social development from conception through adolescence.

622R. Supervision and Administration in Early Childhood Education. (2:2:TBA ea.) Prerequisites: CDFR 210, 323, 422.

A practicum for developing administrative and supervisory skills in training teachers of preschool children.

623. Curriculum Development in Preschool Education. (2:2:2) Prerequisites: CDFR 323, 422; Ed. 301.

Cahoon, Taylor
Comparison and evaluation of various preschool curricula; examination of research in preschool curricula; application of preschool curricular innovations; application of criterion tests related to various preschool curricula.

630. Parent Education. (2:2:0) Prerequisite: CDFR 410 or 460.

Basic principles in organization of parent study programs. Formulation and presentation of program for parents.

640. Theories of Counseling Marital Dyads in Groups. (3:3:0) Prerequisite: CDFR 540.

649. Systems Analysis for Marriage and Family Counseling. (3:2:2) Prerequisites: CDFR 445, 540.

Application of systems theory in the development of intervention for use with marriages and families.

655R. Intermediate Practicum in Marriage and Family Counseling. (4:1:6 ea.) Prerequisites: CDFR 540 and consent of instructor.

Experience in counseling individuals, premarital and marital dyads, families, groups of dyads, and multiple families.

660. Dynamics of Parent-Child Interaction. (2:1:2)

Development and testing of conceptual models of parent-child interaction.

691R. Seminar in Child Development. (1-2:1-2:0 ea.)

692R. Seminar in Family Relationships. (1-2:1-2:0 ea.) The Premarital Dyad—The Marital Dyad—Issues in Family Interaction.

696R. Advanced Research Methodology. (2:1:2 ea.) Prerequisites: CDFR 596R; Stat. 554.

Application of principles of descriptive and experimental research methods, measurements, and multivariate analysis to research problems in child development and family relationships.

697R. Independent Research. (1-3:1-3:0 ea.) Prerequisites: CDFR 596R; Stat. 554.

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

730. Seminar in Family Life Education. (2:1:2) Prerequisite: consent of instructor.

740. Theory Building in Marriage and Family Counseling. (3:3:0) Prerequisite: CDFR 540.

749. Supervision in Marriage and Family Counseling. (3:2:2) Prerequisites: CDFR 540, 649.

Analysis and practice of techniques in the supervision of marriage and family counselors.

755R. Advanced Practicum in Marriage and Family Counseling. (1-4:6-10 ea.) Prerequisites: CDFR 740 and consent of instructor.

760. Concepts and Theories of Marriage and the Family. (3:3:0) Prerequisite: CDFR 560.

791R. Seminar in Child Development. (1-2:1-2:0 ea.) Prerequisite: must be a Ph.D. candidate in child development.

792R. Seminar in Family Relationships. (1-2:1-2:0 ea.)

793R. Seminar in Marriage and Family Counseling. (1-2:1-2:0 ea.)

794. Special Topics in Child Development. (1-2:1-2:0)

795. Special Topics in Family Relationships. (1-2:1-2:0)

799R. Dissertation for the Ph.D. Degree. (Arr.)

Communications

Professors. G. Barrus, Bateman, Bradley, Burnett (chairman, D-501 HFAC), Goodman, Haroldsen, Rich, Smith, **Associate Professors.** Barney (graduate coordinator, D-501 HFAC), Beckham, Fairbanks, Gibb, Peterson, Richardson, Stephan, Whiting.

Assistant Professors. Hickman, Mills.

Program. Master of Arts (M.A.).

Field. Communications.

Entrance Examination Required. Candidates must submit scores from Miller Analogies Test.

Application Consideration Dates. February 1, March 1, May 1, June 1, October 1, and November 1 each year.

Entry Times. Any regular registration.

Master of Arts

Prerequisites.

1. Candidate must have received B.A. or B.S. from an accredited institution with a 3.0 GPA or higher in the most recent 60 semester hours of course work.
2. If the candidate does not have an undergraduate major in communications or an adequate background in one of these areas of interest (communications research, mass communications, speech and interpersonal communication, communication education, or telecommunications), certain undergraduate courses will be required before the Master of Arts degree program is undertaken. This requirement must be met to the satisfaction of the candidate's advisory

committee and the department graduate coordinator or chairman.

3. A background in statistics is desirable and a prerequisite course in that field will be required.
4. Professional experience in the area of communications is desirable and professional competence in written and spoken English is necessary.
5. Candidates must meet all Brigham Young University Graduate School requirements.

Minors Permissible. Option I or Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. Comms. 610, 611. Comms. 613 recommended.

Examinations. Written comprehensive and final oral examination required.

Candidates emphasizing mass communication must, if they select the nonthesis option, present an intensive professional experience as part of their program.

Students desiring to complete a graduate minor in communications should consult the department chairman or graduate coordinator regarding a recommended program of study.

Courses

501. History of Mass Communications. (2:2:0)

Development of the print, film, and broadcast communication media from their beginnings to the present, and their roles as institutions in American society.

510. Mass Media Administration. (2:2:0) Prerequisite: Comms. 312 or 439 or 449.

Problems of organization and administration for newspapers, magazines, radio stations, and television stations.

521. Opinion Writing. (2:2:0) Prerequisite: Comms. 312 or consent of instructor.

Opinion function of the mass media in editorials, columns, commentaries, and reviews.

528. Magazine Editing and Publishing. (2:2:0) Prerequisite: Comms. 312.

Principles of layout and design for magazines and business publications. Contemporary practices in content and production.

550. Instructional Telecommunication Production. (2:2:2) Prerequisite: consent of instructor.

Producing modules and units of predesigned instructional packages.

556. Advanced Program Development and Production. (2:4:1:3-6) Prerequisite: consent of instructor.

An advanced course in broadcasting and film production, observing professional standards.

580. Comparative World Communication Systems. (2:2:0)

Mass media systems in developing authoritarian and free nations. Relationship of these systems to government.

581. International Communication Problems. (2:2:0)

An examination of the cultural, physical, and governmental barriers to the flow of information between nations. Role of the press in foreign policy. International propaganda.

590. Selected Readings and Projects. (1-2:0:0)

Independent research and study outside of usual thesis work.

600. Speech Communication as a Profession. (3:3:0)

A study of the literature and the profession of speech communication.

601. Psychology of Speech Communication. (2:2:0) Prerequisite: Comms. 100, 401, or 403.

Advanced study of the psychological elements in speech, language, and communication behavior.

610. Studies in Communication Theory. (3:3:0) Recommended: Comms. 201 or equivalent; one or more courses in philosophy, psychology, and sociology.

A study of the historical and philosophical development of communications theory, with special application to problems of the mass media.

611. Research Methods in Communication. (3:3:0) Prerequisites: Stat. 221 or equivalent, Psych. 370 or Sociol. 606.

Research techniques in communication fields, including readership, readability, and audience measurement. Introduction to thesis writing.

613. Literature of Communications. (2:2:0) Prerequisite: Comms. 610.

Study and discussion of literature that contributes to the understanding and functioning of communications processes, whatever their origin.

614. Organizational Communication. (2:2:0)

Theory and research on questions of intraorganizational communication problems.

615. Propaganda, Public Opinion, and Communications. (3:3:0)

Roles of the mass media as channels of propaganda and influences upon public opinion. Effects of public opinion on mass communications.

617. Mass Communications and Government. (3:3:0) Prerequisite: Comms. 307 or Pol. Sci. 361 or 363.

An examination of the contemporary relationship between government and the mass media, with attention to the philosophical and historical basis for regulation in light of constitutional guarantees.

620. Instructional Telecommunication Design. (2:2:0) Prerequisite: consent of instructor.

Design, implementation, and evaluation of instructional telecommunication packages.

621. Rhetorical Theory. (3:3:0)

History and development of rhetorical principles in the classical world, with reference to the works of Socrates, Plato, Aristotle, Cicero, Quintilian, and others. Analysis of selected speeches from the periods.

623. American Public Address (2:2:0)

Historical and critical study of significant speakers and speeches and of their relationships to American political, social, and intellectual life. From colonial times to the mid-twentieth century.

624. Contemporary Public Address. (2:2:0)

Historical and critical study of significant speakers and speeches in post-World War II society. Special attention to contemporary modes of communication and trends in rhetorical analysis.

625. Small-Group and Dyadic Communication. (2:2:0)

Theory of dyadic and small-group communication.

626. Argumentation and Advocacy. (2:2:0)

Principles of argumentation applied to inquiry into and advocacy of social issues.

690. Seminar in Mass Communications. (1:1:0)

691R. Special Studies in Communications. (1-3:Arr:Arr. ea.)

Individual work on approved problems not leading to a thesis. Projects must be approved before registration.

692R. Internship in Communications (1-5:1-5:0 ea.) Prerequisites: Comms. 600, 690. Limited to 5 hours of total credit.

Bateman

693. Theory of Persuasion. (2:2:0)

A study and application of ancient and modern persua-

sive concepts in forming, controlling, and/or changing opinions of individuals or groups.

699R. Thesis for Master's Degree. (6-9:Arr.:Arr.)

Computer Science

Professor. Carlson, Dean (chairman, 222 TMCB).

Associate Professors. Beus, Crandall, Gardner, Hays, Norman.

Assistant Professors. Ashton, Burton, Call.

Program. Master of Science (M.S.).

Entrance Examination Required. Graduate Record Examination.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. A bachelor's degree in computer science or equivalent course work in related undergraduate programs.

Field Computer Science

Minors Permissible. Option I or Option II as explained in this catalog.

Requirements. Minimum of 24 semester hours plus thesis (6 semester hours).

Required Courses. None (No graduate credit is given for courses numbered less than 400).

Examination. Degree candidates must pass a written and/or oral examination covering their graduate studies. Depending on his choice of courses, a graduate can continue towards a Ph.D. in computer science or enter employment in the field of his interest.

Courses

501R. Advanced Topics in Computer Science. (3:3:1 ea.) Prerequisite: consent of instructor.

Recent developments in computer science.

505. Computers and Society. (2:2:0) Prerequisite: senior or graduate status in computer science.

Study of the beneficial and adverse impacts upon society of existing and potential uses of computers.

510. Formal Languages and Syntactic Analysis. (3:3:0) Prerequisite: Comput. Sci. 431 or consent of instructor.

Definition of formal grammars and algorithms for syntactic analysis.

☐ **Mathematics 512. Introduction to Numerical Analysis.** (3:3:0)

531. Compiler Theory and Design. (3:3:1) Prerequisites: Comput. Sci. 431 and 432.

Study and creation in theory and design of compilers and interpreters, including syntax-directed compilers and metacompilers.

551. Data-Based Computer Systems. (3:3:0) Prerequisite: Comput. Sci. 351.

Study of data bases and data-base management, including: design and evaluation, retrieval languages and systems, information-structuring techniques, and data integrity.

552. Computer Center Management and Performance Measurement. (3:3:2) Prerequisite: senior or graduate standing in computer science.

Measurement of computer systems using hard and software monitors. Use of monitor information in systems improvement and future design. Implications for computer center management.

555. Computer Graphics. (3:2:1) Prerequisite: Comput. Sci. 431.

Study of computer-graphics techniques developed in recent years, including interactive graphics, graphics systems design, two- and three-dimensional picture drawing and display processors.

561. Theoretical Foundations of Computer Science. (3:3:1) Prerequisite: Math. 210 or equivalent.

Study of formal languages, automata theory, sequential machines, computability and undecidability, and graph theory.

☐ **Psychology 570. Computer Use in the Behavioral Sciences.** (3:3:6)

571. Discrete System Simulation. (3:3:1) Prerequisites: Psych. 570 or Comput. Sci. 231 or 330; Stat. 332.

Computer simulation utilizing logical, numerical, and Monte Carlo models. Collection and evaluation of statistics on passage times, flow volume, queue lengths, manpower, and equipment utilization.

572. Artificial Intelligence and Heuristic Programming. (3:3:0) Prerequisites: Comput. Sci. 330 or 231; Stat. 332.

Heuristic vs. algorithmic methods; description of cognitive processes; approaches to mathematical invention. Survey of research in theorem proving, game playing, simulation of cognitive processes, etc.

581. Advanced Computer Architecture. (3:3:3) Prerequisites: Comput. Sci. 380, Comput. Sci. 224 recommended.

Lecture, discussion, and projects leading to the ability to synthesize innovative and relevant machine organizations.

598R. Special Projects. (1-3:1:0) Prerequisites: Comput. Sci. 351 and consent of instructor.

699R. Thesis for Master's Degree. (Arr.) Prerequisite: consent of committee chairman.

Economics

Professors. Bateman, Clark, Davies (graduate coordinator, 304 JKB), Doney, Nelson.

Associate Professors. Case, Dutton, McDonald, Pope (chairman, 302 JKB), Rickenbach, Wimmer.

Assistant Professors. Crawford, Heiner, Kearl, Koller, Parsons, Pritchett.

Program. Master of Science (M.S.).

Field. Economics (with emphasis in Ph.D. preparation, junior college teaching and general degree).

Entrance Examination Required. Graduate Record Examination (GRE) with advanced examination in economics. International students from non-English-speaking countries must take the TOEFL or Michigan tests in English. Students may be required to take special placement examinations in the prerequisite subject matter areas.

Application Consideration Dates. As received until June 15 for Fall Semester, November 1 for Winter Semester, February 25 for Spring Term, and May 1 for Summer Term.

Entry Times. Any regular registration.

Master of Science

Prerequisites. 6 semester hours of intermediate economic theory; 3 semester hours in principles of statistics, and an introductory calculus course. (D credit is not acceptable); English proficiency.

There are three master's programs. Courses listed below and taken as an undergraduate cannot be repeated for credit, but another course must be substituted.

Program 1 - Ph.D. Preparation

Minors Permissible. Option II only.

Requirements. 33 semester hours, major research paper, final written and/or oral examinations.

Required Courses. Econ. 510, 511, 588, 589R; one of the following two series: Stat. 433, 434, or 520, 521; one of the following: Math. 385 or 243.

Program 2 - Junior College Teaching

Minors Permissible. Normally a continuation of undergraduate minor or major; Option II.

Requirements. 35 semester hours, major research paper, final written and/or oral examinations.

Required Courses. Econ. 330 or 574, 510, 511, 515; Ed. 640, 642, 644, or a secondary teaching certificate.

Program 3 - General Degree

Minors Permissible. Option I or Option II.

Requirements. 24 semester hours plus thesis, final written and/or oral examinations.

Required Courses. Econ. 510, 511, 515, 588.

Courses

501R. Current Economic Policies and Problems. (2-3:Arr.: Arr. ea.)

510. Advanced Price Theory. (3:3:0) Prerequisites: Econ. 310 or 300 and completion of/or concurrent registration in either Econ. 389 or Math. 142 or 214.

Crawford, McDonald, Wimmer, Pope

511. Advanced Theory of Income, Employment, and the Price Level. (3:3:0) Prerequisites: Econ. 310 or 300, 311 or 301 and completion of/or concurrent registration in Econ. 389 or Math. 142 or 214.

Crawford, Dutton, Israelsen, McDonald, Nanto, Wimmer

513R. Topics in Advanced Economic Theory. (3:3:0 ea.) Prerequisites: Econ. 510 and 311 or 301. Israelsen, Nanto

515. Advanced History of Economic Thought. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Clark, Wimmer

530. Advanced Economic Development. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Koller, Nanto

535R. Economic Problems of Selected Areas. (3-6:Arr.: Arr. ea.) Prerequisites: Econ. 310 or 300 and 311 or 301.

The following areas will be considered: economics of the Soviet Union and Eastern Europe, economics of Asia, economics of Latin America, economics of Western Europe.

541. Advanced Comparative Economic Systems. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Israelsen

552. Urban Economics, Theory Problems and Policies. (3:3:0) Prerequisites: Econ. 110 or equivalent.

Case, Nelson, Rickenbach

553. Theory of Money and Banking. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Dutton, Parsons

558. Theory of International Trade and Finance. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Doxey, Israelsen

563. Economics of the Labor Market. (3:3:0) Prerequisites: 310 or 300 and 311 or 301.

Crawford, Davies

574. American Economic Development. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Pritchett, Wimmer, Pope

575. Theory of Public Finance. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301.

Parsons, Pritchett, Rickenbach

576. Industrial Organization and Public Policy. (3:3:0) Prerequisites: Econ. 310 or 300.

Koller

588. Econometrics. (3:3:0) Prerequisites: Econ. 310 or 300, 311 or 301, 388 and 389 or Math. 142 or 214.

McDonald

589R. Advanced Mathematical Economics. (3-6:Arr.: Arr. ea.) Prerequisites: Econ. 310 or 300, 311 or 301, and Econ. 389 or Math. 142 or 214 or consent of instructor.

Pritchett, McDonald

594R. Seminars in Selected Economics Topics. (2-6:Arr.: Arr. ea.) Prerequisites: Completion of a 300- or 500-level course in the same subject area as the seminar.

Seminars will be held in such areas as economic theory, economic history and thought, economic development and comparative systems, monetary and banking theory and policy, urban studies.

595R. Lectures in Economics. (1-3:Arr.: Arr. ea.) Prerequisites: Econ. 110 or equivalent or consent of instructor.

596R. Readings in Economics. (1-3:Arr.: Arr. ea.) Prerequisites: Econ. 110 or equivalent or consent of instructor.

597R. Research in Economics. (1-3:Arr.: Arr. ea.) Prerequisites: Econ. 110 or equivalent or consent of instructor.

664. Advanced Collective Bargaining. (2-3 hours) Davies

688. Applied Econometrics. (3:3:0) Prerequisites: Econ. 310 or 300 and 311 or 301 or Bus. Man. 610 and 620 and consent of instructor.

Crawford, McDonald

699R. Thesis for Master's Degree. (6-9:Arr.: Arr.)

Education

Department of Educational Administration

Professors. Cottrell, Heaton, Oakes, Ovard, Smith (chairman, 207-A MCKB), Van Alfen.

Associate Professors. Hyatt, Rogers, Stephens, Wasden.

Programs. Master of Education (M.Ed.), Educational Specialist (Ed.Sp.), Doctor of Education (Ed.D.).

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Education

Prerequisites. A valid teaching credential and a minimum of one year of teaching experience.

Entrance Examination Required. Miller Analogies Test.

Fields. Community school administration, elementary school administration, secondary school administration.

Minors Permissible. Any approved minor; Option II.

Requirements. Minimum of 36-39 semester hours (including a minimum of 8 semester hours outside the Department of Educational Administration) and an internship.

Residence. At least two full-time registrations (8 hours) must be taken on the Brigham Young University campus.

Final Examination. A final written comprehensive examination covering course work will be administered during the final semester of work leading to the Master of Education degree.

Required Courses. Consult departmental announcement.

This program is designed to prepare public school administrators for state certification at the elementary and secondary levels and to prepare community school administrators.

Educational Specialist

Prerequisites. Students seeking admission to the educational specialist program must present evidence of a valid teaching credential, completion of at least two years of teaching or administrative experience, and a master's degree.

Entrance Examinations Required. Graduate Record Examinations (Aptitude and Advanced Test in Education).

Fields. Community school administration, public school administration, supervision.

Academic and Residence Requirements. The Educational Specialist Program requires 60 semester hours of work beyond the baccalaureate degree. Programs are designed to meet the requirements of the Utah State Board of Education for state endorsements to the Professional Certificate. Twenty-four semester hours and three full-time registrations (8 hours) must be completed on the University campus. Advisory committees, appointed following admission to the program, will assist students in the preparation of a course of study.

Credit for Previous Work. Credit earned in a recognized master's degree program may be applied toward the total credit-hour requirement for the Educational Specialist.

Research Requirement. All students must demonstrate competency in educational research. Such competency is to be demonstrated in the design, implementation, and final written report of a professional educational project conducted on-site at the candidate's place of employment.

Final Examination. A final oral and written examination covering all course work will be administered during the final semester of work leading to the Educational Specialist.

Required Courses. Consult departmental announcement.

This program is designed to prepare public school administrators for state certification at the school district level and to prepare community school administrators.

Doctor of Education

Prerequisites. A valid teaching credential, a minimum of three years of professional experience in education, and a master's degree.

Entrance Examinations Required. Graduate Record Examinations (Aptitude and Advanced Test in Education).

Fields. Community college administration, community school administration, public school administration.

Minors Permissible. Any approved minor.

Requirements. Minimum of 75 semester hours; proficiency in statistics; and a dissertation.

Residence. Two consecutive semesters on the Brigham Young University campus following admission or two consecutive full-time summer sessions on the Brigham Young University campus, with an intervening supervised field experience of 5-6 semester hours for each of two semesters (this option open only to practitioners enrolled in special programs).

Credit for Previous Work. Credit earned in a recognized master's degree or Educational Specialist program may be applied toward the total credit hour requirement for the doctorate.

Required Courses. Consult departmental announcement.

This program is designed to prepare public school administrators for service at the elementary, secondary, and community college levels, and for community school administration.

Educational Administration Courses

500. Adult Education. (3:3:0) Home Study also. Prerequisite: student teaching, teaching certificate, or departmental approval.

514R. Special Topics in Education. (1-3:1-3:1 ea.)

- Elementary Administration
- Secondary Administration
- Community Education

585. (EdAd.-RecEd.) The Community School. (2:2:1) Home Study also.

Basic concepts of the community school, including history, organization, funding, leadership, facilities, and value to the community.

600. Research Design in Education. (3:3:0) Prerequisite: graduate standing.

605. (EdAd.-RecEd.) Community School Administration (2:1:Arr.)

Analysis of administrative problems related to leadership, organization, finance, legal aspects, and public relations.

620R. Master's Admission Seminar. (1-3:2:2 ea.) Prerequisite: teaching certificate.

640. The Community College. (3:3:0) Prerequisite: graduate standing.

644R. Directed Teaching in College. (1-4:4:0) Prerequisite: SecEd. 642.

A course designed to assist students to become skilled teachers at the two-year and four-year college level, to participate as a member of a college staff and to prepare for employment at a collegiate institution.

660. Research Design and Technical Writing in Education. (3:3:0) Prerequisite: Stat. 552.

A study of research techniques and designs in the field of education.

675. Organization and Administration of Public Schools. (3:3:0) (m) Prerequisite: graduate standing.

An introduction to the principles, practices, and procedures in modern public school administration.

677. Public School Finance. (3:3:0) (m) Prerequisite: EdAd. 675.

The theory, principles, and general practices of public school finance.

678. Elementary School Administration. (3:3:0) (m) Prerequisite: EdAd. 675.

Understanding the leadership role of the principal in organizing and adapting the elementary school program to the educational needs of youth.

679. Secondary School Administration. (3:3:0) (m) Prerequisite: EdAd. 675.

Understanding the leadership role of the principal in organizing and adapting the secondary school program to the educational needs of youth.

680R. Internship in Educational Administration. (2-6:0: 6-18 ea.) (m) Prerequisite: consent of instructor eight weeks in advance of registration.

682. The Teacher and School Administration. (2:2:0) (m) Prerequisite: EdAd. 678 or 679.

685. Supervision of Education. (3:3:0) (m) Prerequisite: EdAd. 675.

The principles of supervision, curriculum, planning, and in-service training in the improvement of instruction.

687. School Law. (2:2:0) (m) Prerequisite: EdAd. 675.

690R. Seminar in Educational Administration. (2:2:0 ea.) Prerequisite: consent of instructor.

691. Doctoral Admission Seminar. (2:2:0 ea.) Prerequisite: permission of department.

693R. Independent Reading. (1-5:Arr.:Arr. ea.) Prerequisite: consent of instructor.

696R. Independent Research. (1-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

698R. Field Project. (2-4:Arr.:Arr.) Prerequisites: Stat. 552 and EdAd. 600 or equivalent.

709. Educational Planning and Decision Process. (3:2:2) Prerequisite: EdAd. 675.

731. Systems Analysis and Research Development Management. (3:3:0) (m) Prerequisite: EdAd. 709.

Use of systems analysis to manage complex operations. Techniques for planning, budgeting, and organizing research and development, and managing complex instructional systems.

751. Research Design for Doctoral Dissertation. (2:2:4) Prerequisites: doctoral candidacy and Stat. 552 or equivalent.

760R. Contemporary Problems of School Administration. (2:2:0) (m) Prerequisite: EdAd. 678 or 679.

765. Business Administration of the Public School. (2:2:0) (m) Prerequisite: EdAd. 677.

768. Leadership in Educational Administration. (3:3:0) (m) Prerequisite: EdAd. 675.

A study of developmental leadership theory, group processes, concepts, and strategies essential to successful administration leadership, with opportunity for some leadership experience.

769. School-Community Relations. (2:2:0) Prerequisite: EdAd. 675.

770. Administration of Continuing Education. (2:2:0) (m) Prerequisite: graduate standing.

771. Community College Administration. (2:2:0) (m) Prerequisite: EdAd. 640.

A study of the organizational structure and administration of the junior college.

772. Community College Curriculum. (2:2:0) Prerequisite: EdAd. 640.

An examination of developmental, transfer, occupational, general, and continuing education.

773. Public School Building Programs. (3:3:0) (m) Prerequisite: EdAd. 677 and 687.

775. Theory in Educational Administration. (2:2:0) (m) Prerequisite: EdAd. 675.

780R. Internship in Educational Administration. (2-8:0: 6-24 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.

790R. Seminar in Educational Administration. (2:2:0 ea.) Prerequisite: consent of instructor.

796R. Advanced Research. (2-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

799R. Dissertation. (Arr.) Prerequisite: EdAd. 751 or equivalent.

Department of Educational Psychology

Professors. Downing, J. Harris, B. Harrison, Jensen, Kelly, Low, Newman, Rohde.

Associate Professors. Bingham, Chamberlain, Crandell, Gale (chairman, 180 CHLC), Heaps, Hendrix, Johnson, Jones, Peterson, Thomas, Weaver, Williams, Winward, Wootton.

Assistant Professors. Buckner, Hammond, C. Harris, Ingram, Kay, Wadham, Walton.

Programs. Master of Education (M.Ed.), Master of Communicative Disorders (MCD), Master of Arts (M.A.), Educational Specialist (Ed.Sp.), Doctor of Education (Ed.D.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required. Graduate Record Examination (verbal, quantitative, and advanced test in education or psychology) and other area tests as determined by area of study. Applications will not be considered without appropriate test scores.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Fall Semester and Summer Term only. School psychology majors, Fall Semester only.

Master of Education/Master of Communicative Disorders

Prerequisites. A valid teaching credential and/or appropriate professional experience as determined by major area of study.

Fields. Communicative disorders, counseling and guidance, educational psychology, school psychology (interdepartmental), special education.

Minors Permissible. Any approved minor; Option II.

Requirements. Minimum of 34-39 semester hours. Course work outside the major area of study may be required.

Residence. At least one full-time registration must be taken on the Brigham Young University campus.

Credit for Previous Work. Credit earned in compliance with state certification or renewal requirements must be evaluated and approved by the student's sponsor to be applied toward the total credit hour requirement for the Master of Education degree.

Final Examination: A written and/or oral comprehensive examination is required.

Required Courses. Consult department.

Master of Arts

Prerequisites. A valid teaching credential and/or appropriate professional experience as determined by major area of study.

Fields. Communicative disorders, counseling and guidance, educational psychology, school psychology (interdepartmental), special education.

Minors Permissible. Any approved minor; Option II.

Requirements. Minimum of 27 semester hours plus thesis (6-hr. min.—EdPsy. 699R).

Residence. At least one full-time registration must be completed on the Brigham Young University campus.

Final Examination: An oral and/or written comprehensive exam is required.

Required Courses. Consult department.

Educational Specialist

Prerequisites. A valid teaching credential and/or a minimum of two years of appropriate professional ex-

perience, as determined by major area of study, and a master's degree.

Fields. Counseling and guidance, special education.
Minors Permissible. Any approved minor.

Requirements. Minimum of 66 semester hours; competency in research as demonstrated by completion of a professional education project.

Residence. At least two full-time registrations must be completed on the Brigham Young University campus.

Required Courses. Consult department.

Doctor of Education

Prerequisites. A valid teaching credential and/or a minimum of three years of appropriate professional experience, as determined by major area of study, and a master's degree or the equivalent.

Fields. Counseling and guidance, educational psychology, special education.

Minors Permissible. Any approved minor.

Requirements. Minimum of 75 semester hours; proficiency in statistics; a dissertation (12-hr. min.—EdPsy. 799R).

Residence. Two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree; or as part of an approved intern program, two consecutive full-time summer sessions on the Brigham Young University campus with intervening supervised field experience.

Required Courses. Consult department.

Doctor of Philosophy

Prerequisites. A master's degree in education or psychology or the equivalent.

Fields. Counseling and guidance, educational psychology, special education.

Minors Permissible. Any approved minor.

Requirements. Minimum of 24 semester hours beyond master's degree, plus dissertation (18-hr. min.—EdPsy. 799R); satisfaction of tool subject prerequisites. Proficiency in statistics.

Required Courses. Consult department.

Educational Psychology Courses

500R. Research Design in Educational Psychology. (3:3:0) Prerequisite: graduate standing.

501. Educational Tests and Measurements. (3:3:0) Prerequisite: EdPsy. 403R or equivalent.

Principles of test construction and use. Interpretation of standardized tests.

505. Psycho-Educational Implications of Exceptionality. (1-3:Arr.:Arr.)

506. Behavioral Science Foundations for Special Education. (1-3:Arr.:Arr.)

507. Evaluation of Individual Differences. (1-3:Arr.:Arr.)

510. Education of Emotionally Handicapped Children. (3:3:1) Prerequisites: EdPsy. 205 and consent of instructor.

Organization of educational programs, curricular development, and teaching methods for students with emotional problems.

514R. Special Topics in Educational Psychology. (1-3:1-3:1 ea.)

- Remedial Reading
- Behavior Modification
- Effectiveness Training
- Transactional Analysis
- *Instructional Media
- Specific Problems in Special Education
- Diagnostic and Psychological Tests in School Setting
- Rapid Reading of Braille
- Changing Role of Counselors
- Issues of Communicative Disorders
- Structured Tutoring

*This course will cover various phases of the subject matter, and title may change to fit specific category.

515. Curriculum for the Visually Handicapped. (1-4:Arr.:Arr.) Prerequisites: EdPsy. 415, 416.

Problems confronting administrator and teacher in the different types of school programs now available for the visually handicapped. Specialized teaching methods and materials.

516. Advanced Braille. (3:3:0) Prerequisites: EdPsy. 416 and consent of instructor.

520. Curriculum for Mentally Retarded Children. (3:2:2) Prerequisite: EdPsy. 420.

Placement and organization of educational programs, curriculum development, and teaching methods for classes for mentally retarded students are considered.

526. Curriculum for the Learning Disabled. (3:3:0) Prerequisite: EdPsy. 205, 426, or consent of instructor.

Organization of educational programs, curriculum development, and teaching methods for children with learning disabilities.

530. Sign Language and Manual Communications Systems. (3:3:2)

Provides orientation to manual communication systems and functional skill in the use of Ameslan, finger spelling, and other nonoral language forms.

545. Counseling and Guidance Services. (2:2:0) Home Study also.

Principles and practices of pupil personnel services in the public schools.

573. Workshop for Teachers of Bilingual Children. (2.8 hrs./day for two weeks)

Study of educational needs, materials, and methods appropriate to the background and language problems of bilingual students.

580R. Directed Observation in the Schools. (2:1:4 ea.) Prerequisite: consent of instructor.

581R. Practicum in Mental Retardation. (2-8:0:5-12 ea.) Prerequisite: consent of instructor.

582R. Practicum in Emotionally Handicapped. (2-8:0:5-12 ea.) Prerequisite: consent of instructor.

583R. Practicum in Visually Handicapped. (2-8:0:5-12 ea.) Prerequisite: consent of instructor.

584R. Practicum in Learning Disabilities. (2-8:0:5-12 ea.) Prerequisite: consent of instructor.

585R. Practicum in Communicative Disorders. (2-8:1:5-12 ea.) Prerequisite: consent of instructor.

591R. Master's Admission Seminar. (1-3:2:2 ea.) Prerequisite: provisional admission to master's degree program.

600. (EdPsy-InSci.) Research Design and Critical Analysis in Educational Psychology. (3:3:0) Prerequisite: Stat. 552.

A study of research techniques and designs in the field of education.

601. Advanced Educational Psychology. (3:3:1)

602. Behavior Problems in the Schools. (2:2:0)

Study of mental hygiene principles and their application to typical classroom problems.

603. Guidance and Counseling for the Handicapped. (2:2:0) Prerequisite: EdPsy. 205.

Principles and techniques of guidance services for the physically, mentally, or socially handicapped, with study of effective counseling techniques. Required for California certification.

604. Special Education Services in Public Schools. (2:2:0)

Problems of organization, administration, and supervision of special education services in the public schools.

605. Communication Disorders of the Mentally Retarded. (2:2:1)**606. Dynamics of Human Communication. (2:2:0)**

A study of the dynamics of intra- and interpersonal communication. The human factors of personality, learning, motivation, cognition, etc., are considered from the perspective of human communication.

625. Diagnosis of Achievement Difficulties. (3:2:2) Prerequisite: consent of instructor.

Survey and use of diagnostic techniques in identification and evaluation of achievement difficulties.

626. Remedial Teaching Techniques. (3:2:2) Prerequisites: EdPsy. 625 and consent of instructor.

Procedures and materials appropriate for remediation of achievement difficulties, with major emphasis in reading.

627. Diagnostic Teaching. (2:1:2) Prerequisite: EdPsy. 505 or equivalent.

Principles and practices of classroom learning which enable the diagnostic teacher to determine and remediate learning problems.

628. Prescriptive Teaching. (2:1:2) Prerequisite: EdPsy. 505 or equivalent.

Information available from all sources is analyzed and supported, where necessary, in order to build an individualized program to remediate a learning problem.

629. Motor Perception. (2:1:2) Prerequisite: EdPsy. 505 or equivalent.

The diagnosis and remediation of motor perceptual problems which interfere with learning, using tools such as Kephart, Frostig, Cranney, etc.

630. Disorders of Articulation. (2:2:2)**631. Stuttering. (2:2:1)****632. Voice Disorders. (2:2:1)****633. Language Disorders in Children. (2:2:0)****634. Seminar in Organically Based Speech Disorders. (2:2:0)****635. Seminar in the Generation and Perception of Acoustic Stimuli. (2:2:0)****636. Anatomy and Physiology of Human Communication. (2:2:0)****637. Aphasia. (2:2:1)****638. Clinical Audiology. (2:2:2)**

The theoretical basis and development of skill in the techniques of administering new and advanced audiometric procedures in the assessment of impaired hearing.

639. Community and Industrial Audiology. (2:2:1)

Study of hearing problems in industry and legal implications.

640. Pediatric Audiology. (2:2:1)

Intensive study of the problems encountered, the rationale behind, and the audiological instruments used in assessing the hearing of infants and young children.

641. Hearing Aids. (2:2:0)

Designed to acquaint students in speech, hearing, and related fields with basic designs, operation, selection, and use of hearing aids of all types for individuals with impaired hearing.

642. History, Education, and Guidance of the Hearing Impaired. (2:2:0) Prerequisites: EdPsy. 100, 205.**643. Aural Rehabilitation. (2:2:2)****644. Methods and Problems of Research in Communicative Disorders. (2:2:0)**

A practical study of methods of scientific inquiry as applied to the disorders of communication. Students should take this course early in their graduate program to prepare them for their thesis projects.

645. Guidance Testing and Diagnosis. (3:3:0) Prerequisite: EdPsy. 545.

Study of advantages and disadvantages of particular types of tests; practice in interpreting test results; implications of test choices and usage.

646. Counseling Theory and Practice. (3:3:0) Prerequisite: EdPsy. 545.

Includes an intensive study of the various theories of counseling, important concepts and views of counseling authorities, current research and accepted practices.

647. Laboratory in Counseling Practice. (1:0:2) Prerequisite: completion of or concurrent registration in EdPsy. 545, 646.**648. Group Techniques for Counselors. (3:3:0) Prerequisite: EdPsy. 646.****649. Informational Services in Guidance. (3:2:4) Prerequisite: EdPsy. 545.**

Techniques and theories of vocation selection and utilization of community resources, occupational data, and psychological factors underlying career choices.

650. Organization of Guidance. (2:2:0) Prerequisite: EdPsy. 545.

Procedures of organizing and administering guidance programs.

651. Laboratory for Guidance Services. (1:0:2) Prerequisite: completion of or concurrent registration in EdPsy. 650.**652. Elementary School Guidance. (2:2:0)****653. Student Personnel Services in Higher Education. (2:2:0) Prerequisite: EdPsy. 545.****670. Instrumentation in Communicative Disorders. (2:1:2)**

A study of technical equipment used in audiology, psychophysics, and speech science. Functions of calibration, measurement, monitoring, programming, and recording are treated.

674. Psycholinguistics. (2:1:2) Prerequisite: EdPsy. 505.

Administering, programming, and application of research based on the Illinois Test of Psycholinguistic Abilities (ITPA).

680R. Internship in Educational Psychology. (2-6:0:6-18 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.**681R. Practicum in Educational Psychology. (2-6:1-2:4-8 ea.)****682R. Practicum in School Psychology. (2-6:1-2:4-8 ea.)****683R. Practicum in Special Education. (2-6:1-2:4-8 ea.)****684R. Practicum in Counseling and Guidance. (2-4:1-2:4-8 ea.)****690R. Seminar. (2:2:0 ea.) Prerequisite: consent of instructor.**

691. Doctoral Admissions Seminar. (2:2:0) Prerequisite: permission of department.

692R. Advanced Topics in Special Education. (1-3:Arr.:Arr. ea.) Prerequisite: consent of instructor.

693R. Readings. (1-5:Arr.:Arr. ea.) Prerequisite: consent of instructor.

694R. Special Projects in Communicative Disorders. (1-3:1-3:0 ea.) Prerequisite: consent of instructor.

696R. Research. (1-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

698R. Field Project. (2-4:Arr.:Arr. ea.) Prerequisite: Stat. 552 and EdPsy. 600 or equivalent.

699R. Thesis. (6-9:Arr.:Arr. ea.)

700. Research Design for Doctoral Dissertation. (2:2:4) Prerequisite: doctoral candidacy and Stat. 552 or equivalent.

745. Advanced Counseling Theory. (2:2:0) Prerequisites: EdPsy. 646, Psych. 550.

765. Systems Analysis Research and Development Management. (3:3:0) Prerequisite: Comput. Sci. 131 or equivalent.

Use of systems analysis to manage complex operations. Techniques for planning, budgeting, and organizing research and development; and managing complex instructional systems.

780R. Internship. (2-8:0:6-24 ea.) Prerequisites: consent of instructor eight weeks in advance of registration.

784. Advanced Practicum in Counseling and Guidance. (3:1:8) Prerequisite: consent of instructor.

790R. Advanced Seminar. (2:2:0 ea.) Prerequisite: consent of instructor.

796R. Advanced Research. (2-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

799R. Dissertation. (Arr.) Prerequisite: EdPsy. 700 or equivalent.

Department of Elementary Education

Professors. R. Allred, Berryessa, Clark, Daines, Harmon, Sucher (chairman, 205 MCKB), Wolfram.

Associate Professors. Bishop, Butterfield, Cutler, Dunn, Harms, Heil, Moore, Ord, Puckett, Winterrose, Young.

Assistant Professors. Anderson, Baird, Campbell, Nelson, Tolman, Wade.

Programs. Master of Education (M.Ed.), Master of Arts (M.A.), Sixth-Year Specialist (Ed.Sp.), Doctor of Education (Ed.D.).

Entrance Examination Required. Graduate Record Examination (aptitude and advanced test in education).

Application Consideration Dates. Same as Graduate School deadlines for Summer Term.

Entry Time. Summer Term only on master's degree programs.

Master of Education

Prerequisites. A valid elementary teaching credential. One year of successful teaching experience. The Reading Specialist degree requires three years of successful professional education experience prior to graduation.

Fields. Elementary curriculum and instruction, reading specialist.

Minors Permissible. Option I, any approved minor; Option II.

Requirements. Minimum of 36 semester hours; either a written or an oral comprehensive examination.

Residence. At least one full-time summer or semester registration must be taken on the Brigham Young University campus.

Credit for Previous Work. Up to 10 hours of credit can be applied toward a Master of Education degree. This credit must be evaluated and approved by the student's advisory committee.

Required Courses. Consult departmental brochure, available in 201 MCKB.

Master of Arts

Prerequisite. A valid elementary teaching credential. One year of successful teaching experience. The Reading Specialist degree requires three years of successful professional education experience prior to graduation.

Fields. Elementary curriculum and instruction, reading specialist.

Minors Permissible. Option I, any approved minor; Option II.

Requirements. Minimum of 33 semester hours; a final oral examination.

Residence. At least one full-time summer or semester registration must be completed on the Brigham Young University campus.

Credit for Previous Work. Up to 10 hours of credit can be applied toward a Master of Arts degree. This credit must be evaluated and approved by the student's advisory committee.

Required Courses. Consult departmental brochure, available in 201 MCKB.

Sixth-Year Specialist

Prerequisites. A valid elementary teaching credential, a minimum of two years of teaching experience, and a master's degree.

Fields. Elementary curriculum and instruction, reading specialist.

Minors Permissible. Any approved minor; Option II.

Requirements. Minimum of 60 semester hours; a field project (6-hr. min.—EEd. 699R).

Residence. At least two full-time consecutive semester registrations must be completed on the Brigham Young University campus, or, as part of an approved intern program, two consecutive full-time Summer Term sessions on the BYU campus with intervening supervised field experience.

Credit for Previous Work. Credit applied toward a Sixth-Year Specialist degree must be evaluated and approved by the student's advisory committee.

Required Courses. Consult departmental brochure, available in 201 MCKB.

Doctor of Education

Prerequisites. A valid elementary teaching credential, a minimum of three years of successful professional education experience, and a master's degree.

Field. Elementary curriculum and instruction.

Minors Permissible. Any approved minor, Option II.

Requirements. Minimum of 75 semester hours; proficiency in statistics; a field study (12-hr. min.—EEd. 799R).

Residence. Two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree or, as part of an approved intern program, two consecutive full-time Summer Term sessions on the BYU campus with intervening supervised field experiences.

Credit for Previous Work. Credit applied toward a Doctor of Education degree must be evaluated and approved by the student's advisory committee.

Required Courses. Consult departmental brochure, available in 201 MCKB.

Elementary Education Courses

514R. Special Topics in Education. (1-3:1-3:1 ea.) Home Study also.

- *Inter-institutional Workshop—Communications
- Precision Teaching
- Reading
- Mathematics
- Social Sciences
- *Sciences
- Environmental Education
- Individual Instruction—Elementary
- Curriculum Innovations in Elementary Education
- Children's Literature
- Introduction to Writing Children's Books

*These courses will cover various phases of the subject matter, and titles may change to fit specific category.

527. Readiness and Beginning Reading. (2:2:0) (m) Prerequisite: EEd. 400 or teaching certificate.

533. Kindergarten Education. (2:2:0) Prerequisites: CDFR 321, EEd. 400, or teaching certificate.

534. Innovative Practices in the Elementary School. (3:3:1)

547. Foundations in Reading K-12. (3:3:0) Prerequisite: teaching certificate or consent of instructor.

578R. Practicum in Teaching. (1-4:Arr.:Arr. ea.)

An application for a specific assignment must be filed with the Student Teaching Office one semester before receiving an assignment. A laboratory fee of \$25 is charged, payable upon application for student teaching.

600. Research Design in Education. (3:3:0) Prerequisites: graduate standing, EEd. 620.

612R. Supervision of Student Teachers. (1-3:Arr.:Arr. ea.) Prerequisite: teaching certificate.

620. Master's Admission Seminar. (1-3:2:2) Prerequisite: teaching certificate.

622. Advanced Study in Childhood Education. (2:2:0) Prerequisite: teaching certificate.

Educational theory and analysis of current practices in schools, as related to the significance and problems of early childhood education.

623. Teaching Science in the Elementary School. (2:2:0) Prerequisite: teaching certificate.

625. Teaching Social Studies in the Elementary School. (2:2:0) Prerequisite: teaching certificate.

627. Teaching Reading in the Curriculum. (2:2:0) Prerequisite: teaching certificate or consent of instructor. Reading in the different content areas. Study of comprehension and study skills as developed in kindergarten through grade twelve.

628. Children's Literature. (2:2:0) Prerequisite: EEd. 340.

631. Curriculum Development in the Elementary School. (3:3:0) Prerequisite: teaching certificate.

Principles and procedures for organizing the instructional patterns of curriculum organizations; techniques for change, evaluation, and stabilization of curriculum.

632. Research and Literature in Reading. (2:2:0) Prerequisites: EEd. 547 and 627.

Study of the history of reading, with emphasis on the research and current literature in the teaching of reading from kindergarten through grade twelve. Offered Summer 1975 and alternate years.

633. Teaching Language Arts in the Elementary School. (2:2:0) Prerequisite: teaching certificate.

Modern methods of instruction in listening, speaking, and writing, with their related skills.

635. Teaching Mathematics in the Elementary School. (2:2:0) Prerequisites: EEd. 350 (mathematics) or equivalent, and teaching certificate.

Analysis and evaluation of research and innovations in elementary school mathematics, with some attention to the development of enrichment materials.

637. Organization and Supervision of Reading Programs K-12. (2:2:0) Prerequisites: EEd. 547, 627.

660. Research Design and Technical Writing in Education. (3:3:0) Prerequisite: Stat 552.

A study of research techniques and designs in the field of education.

680R. Internship. (2-6:0:6-18 ea.) (m) Prerequisite: consent of instructor eight weeks in advance of registration.

690R. Seminar. (2:2:0 ea.) Prerequisite: consent of instructor.

691. Doctoral Admission Seminar. (2:2:0 ea.) Prerequisite: permission of department.

693R. Independent Readings. (1-5:Arr.:Arr. ea.) Prerequisite: consent of instructor.

696R. Independent Research. (1-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

698R. Field Project. (2-4:Arr.:Arr.) Prerequisite: EEd. 600 or equivalent.

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea)

727. Curriculum of the Public Schools. (2:2:0) Prerequisite: master's degree.

751. Research Design for Doctoral Dissertation. (2:2:4) Prerequisites: doctoral candidacy and Stat. 552 or equivalent.

780R. Internship in Education. (2-8:0:6-24 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.

790R. Seminar. (2:2:0 ea.) Prerequisite: consent of instructor.

796R. Advanced Research. (2-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

799R. Dissertation. (Arr.) Prerequisite: EEd. 751 or equivalent and consent of committee chairman.

Department of Instructional Science

Professors. H. Black, Bunderson (Computer Science), Clark, Faust, Merrill, Van Mondfrans.

Associate Professors. D. Black (CDFR), Goodman (Communications & InSci.), Green, G. Harrison, Kay (Sec-Ed.), Keele (Honors), Schneider, Snow, Vance (CDFR).

Assistant Professors. Brown, Card, Wood.

Programs. Master of Education (M.Ed.), Master of Arts (M.A.), Educational Specialist (Ed.Sp.), Doctor of Education (Ed.D.), Doctor of Philosophy (Ph.D.)

Entrance Examination Required. Graduate Record Examination (verbal and quantitative).

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration. Fall Semester recommended.

Master of Education

Prerequisites. A valid teaching credential and/or appropriate professional experience.

Fields. Instructional science and technology, Instructional media.

Minors Permissible. Any approved minor, Option II.

Requirements. Minimum of 36 hours (including a minimum of 3 semester hours of internship).

Residence. At least one full-time registration must be taken on the Brigham Young University campus.

Required Courses. Consult department.

Master of Arts

Prerequisites. Evidence of writing skills, precalculus math.

Fields. Instructional psychology.

Minors Permissible. Any approved minor, Option II.

Requirements. Minimum of 27 semester hours plus thesis (6-hr. min.—699R.)

Residence. At least one full-time semester of registration must be taken at the Brigham Young University.

Required Courses. Consult department.

Educational Specialist

Prerequisites. A valid teaching credential and/or a minimum of two years of appropriate professional experience.

Fields. Instructional design and production, instructional systems management.

Minors Permissible. Any approved minor.

Requirements. Minimum of 66 semester hours; two semesters of internship.

Residence. At least two full-time semesters of registration must be completed on the Brigham Young University campus.

Required Courses. Consult department.

Doctor of Education

Prerequisites. A valid teaching credential and/or a minimum of two years of appropriate professional experience as determined by major area of study.

Fields. Instructional design and production, instructional systems management, instructional evaluation.

Minors Permissible. Any approved minor in management, production and design, or psychology streams.

Requirements. Minimum of 82 semester hours; two semesters of internship; Stat. 554 or equivalent; a dissertation (12-hr. min.—799R.).

Residence. Two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree; or, as part of an approved intern program, two consecutive full-time summer sessions on the Brigham Young University campus with intervening supervised field experience.

Required Courses. Consult department.

Doctor of Philosophy: Instructional Science and Technology

Prerequisites. Demonstrated competence in interpersonal effectiveness, writing skill, and quantitative skill. Tool Requirement IV required to include Stat. 501 and 502, Psych. 570, and advanced quantitative statistics or computer science options.

Minors Permissible. Minor selected from management stream or production and design stream.

Requirements. Minimum of 45 semester hours plus dissertation (18-hr. min.—799R) and four semesters of internship.

Required Courses. Consult department.

Doctor of Philosophy: Instructional Psychology

(Interdisciplinary program jointly offered by the departments of Instructional Science and Psychology. For information, contact either department.)

Prerequisites. Evidence of interpersonal effectiveness, writing skill, and quantitative facility through critical Graduate Record Examination scores, coursework, and experience. Tool requirement IV required, including equivalent of Stat. 501 and 502; Comput. Sci. 131, Psych. 570 or Comput. Sci. 501R; one advanced course from Stat. 531, 534, 536, Comput. Sci. 571, 572, or equivalent.

Minor Required. Psychology core course requirement as specified by advisory committee to include Psych. 520, 530, 560, 562, 574, or 585.

Requirements. Minimum of 57 semester hours plus dissertation (18-hr. min.—799R), including—core InSci. 581, 582, 583, 681, 682, 683; advanced projects (15-27 hrs.), including InSci. 696R, 796R, 798R; four semesters of internship minimum.

Professional Preparation. Scholarly and professional positions in research, development, and evaluation in major universities, colleges, and educational agencies of church, government, industry, and school systems.

Instructional Science Courses

☐ **Philosophy 355.** Philosophy of the Behavioral and Social Sciences. (3:3:0)

456. Instructional Media Production and Utilization. (2:1:3)

490R. Seminar. (1-2:1-2:0 ea.) Prerequisite: consent of instructor.

491R. Readings. (1-2:Arr.:Arr. ea.)

☐ **Computer Science 501R.** Advanced Topics in Computer Science (3:3:1 ea.)

514R. Special Topics in Educational Psychology. (1-3:1-3:1 ea.)

- Remedial Reading
- Behavior Modification
- Effectiveness Training
- Transactional Analysis
- *Instructional Media
- Specific Problems in Special Education
- Diagnostic and Psychological Tests in School Setting
- Rapid Reading of Braille
- Changing Role of Counselors
- Issues of Communicative Disorders
- Structured Tutoring

*This course will cover various phases of the subject matter, and title may change to fit specific category.

☐ **Communications 550.** Problems and Practices in Educational Television and Radio. (2:2:0)

555. Instructional Media in the School. (3:2:3)

A foundation course to help teacher, librarian and/or parent make more effective use of media materials. Assumes some previous experience in teaching or with media.

556. Selection and Utilization of Instructional Materials. (2:2:0) Prerequisite: InSci. 555 or consent of instructor.

Principles of selection, evaluation, and utilization of instructional materials. Examination of variety of "helps" to effective selection and utilization.

☐ **Psychology 560. Learning Theory. (3:3:0)**☐ **Psychology 562. Cognitive Processes. (3:3:0)****565. Media Production Techniques. (2:1:3)** Prerequisite: InSci. 555 or consent of instructor.**566. Photography in Instruction. (2:1:3)** Prerequisite: InSci. 555 or consent of instructor.

The processes, techniques, and equipment applicable to the preparation of photographic instructional materials.

567. Art and Graphic Processes in Instruction. (3:2:3) Prerequisite: InSci. 555 or consent of instructor.

Preparation of instructional materials or reproduction masters using art and graphic processes.

568. Instructional Use of Audio Programs. (2:1:3) Prerequisite: InSci. 555 or consent of instructor.

Design, development, and utilization of audio materials and systems for large- and small-group and individual learning.

☐ **Psychology 570. Computer Use in the Behavioral Sciences. (3:3:6)****580. Proseminar in Instructional Science Inquiry. (3:3:0)**

Interdisciplinary review of science-based methodological procedures in major areas of instructional science.

581. Theoretical Research. (3:3:0)**582. Measurement and Evaluation. (3:3:0)****583. Cybernetic Systems Design. (3:3:0)****584. Display R & D. (3:3:0)****585. Management R & D. (3:3:0)****600. (InSci.-EdPsy.) Research Design and Critical Analysis in Educational Psychology. (3:3:0)** Prerequisite: Stat. 552.

A study of research techniques and designs in the field of education.

660. Management of Instructional Media Programs (2:2:0) Prerequisite: InSci. 555 or consent of instructor.

Principles of management of people, materials, equipment, and facilities supporting the utilization of instructional media in varied educational settings and operational levels.

670. Advanced Design and Production of Instructional Materials. (2:2:1) Prerequisite: InSci. 555 or consent of instructor.

Design and development and evaluation of instructional materials emphasizing individual projects.

☐ **Psychology 678. Measurement Theory. (3:3:0)****681. Theoretical Research in Instructional Psychology. (3:2:4)****682. Evaluation and Criterion Assessment. (3:2:1)****683. Comprehensive Instructional System, R & D. (3:3:2)** Prerequisites: InSci. 590R; Psych. 460 or equivalent.**684. Representation and Display, R & D. (3:3:0)**

Content, task, and interface analysis supporting conceptual and perceptual representation at information network and momentary display levels. Instructional design and validation strategies.

685. Instructional Systems Management R & D. (3:3:0) Systems theory and analysis applications to instructional systems. Topics to include implementation, operations management, R & D management.**690R. Professional Topics Seminar. (1-3:1-3:Arr. ea.)** Prerequisite: InSci. 580, 581, 582, 583, or 584 or consent of instructor.

Topics to include: evaluation systems, representation (conceptual and perceptual) systems, implementation and management systems, general systems.

691R. Readings in Instructional Science. (1-5:Arr:Arr. ea.) Prerequisite: consent of instructor.**695R. Professional R & D Internship. (5-3:Arr:Arr. ea.)**

Sections to include: system evaluation projects, representation system projects, implementation and management projects, general integrated system projects.

696R. Professional Product R & D. (.5-3:Arr:15-9 ea.) Prerequisite: InSci. 681, 682, 683, 684, 685 or equivalent.

Instructionally validating products satisfying criteria of clients requiring professional level products. Topics to include: evaluation systems, representative systems, implementation systems, general systems.

699R. Field Project. (1-9:Arr:Arr. ea.)**790R. Theoretical Topics Seminar. (1-3:1-3:Arr. ea.)** Prerequisite: InSci. 580, 581, 582, 583, 584 or consent of instructor.

Topics to include: general system theory, evaluation theory, representation (conceptual and perceptual) theory, implementation and management theory.

795R. Theory R & D Internship. (.5-3:Arr:Arr. ea.) Prerequisite: consent of instructor.

Sections to include: evaluation theory development, representation theory development, implementation and management theory development, general system theory development.

796R. Theoretical Product R & D. (.5-3:Arr:1.5-9 ea.) Prerequisite: InSci. 681, 682, 683, 684, 685 or equivalent.

Theoretical products, especially publication-oriented, theory-testing research. Topics to include areas of theoretical investigation, general systems, evaluation, representation, implementation and management.

798R. Advanced Product R & D. (.5-6:Arr:Arr. ea.) Prerequisites: InSci. 696R; 698R or equivalent.

Advanced designed and validated packaged instructional product(s) satisfying professional and/or scientific client criteria. Sections to include theory, evaluation systems, representation systems, management systems.

799R. Dissertation. (Arr.) Prerequisite: InSci. 796R or equivalent.

Department of Secondary Education and Foundations

Professors. Alley, Baird, Belt, Holder, Muse, Wilcox.
Associate Professors. Allred (chairman, 113 MCKB), Shute, Thomson.

Assistant Professors. Coombs, Grossen, Kay, Webb.

Programs. Master of Education (M.Ed.), Sixth-Year Specialist (Ed.Sp.), Doctor of Education (Ed.D.).

Entrance Examination Required. Graduate Record Examination (aptitude and advanced test in education). Applications will not be considered without appropriate test scores.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Education

Prerequisite. A valid secondary teaching credential.

Fields. Comparative and international education, secondary curriculum and instruction.

Minors Permissible. Any approved minor; Option II.

Requirements. Minimum of 36 semester hours (including a minimum of 8 semester hours outside the Department of Secondary Education and Foundations); a written comprehensive examination and/or an oral comprehensive examination.

Residence. At least one full-time registration must be completed on the Brigham Young University campus.

Credit for Previous Work. Transfer credit will be evaluated by the department from an official transcript in determining equivalency and relevancy. This includes credit earned in compliance with state certification or renewal requirements.

Required Courses. Consult departmental brochure.

Sixth-Year Specialist

Prerequisites. A valid secondary teaching credential, a minimum of two years of successful teaching experience, and a master's degree.

Field. Secondary curriculum and instruction.

Minors Permissible. Any approved minor.

Requirements. Minimum of 60 semester hours (including a minimum of 10 semester hours outside the College of Education); a field project (6-hr. min.—699R).

Residence. At least two full-time registrations must be completed on the Brigham Young University campus.

Credit for Previous Work. Transfer credit will be evaluated by the department from an official transcript in determining equivalency and relevancy. This includes credit earned in compliance with state certification or renewal requirements.

Required Courses. Consult departmental brochure.

Doctor of Education

Prerequisites. A valid secondary teaching credential, a minimum of two years of successful professional education experience, and a master's degree.

Field. Secondary curriculum and instruction.

Minor. Any approved minor.

Requirements. Minimum of 75 semester hours (including a minimum of 12 semester hours outside the Department of Secondary Education and Foundations); proficiency in statistics; a dissertation (12-hr. min.—799R).

Residence. At least two consecutive full-time Summer Term sessions must be completed on the Brigham Young University campus, with an intervening supervised field experience of 5 semester hours for each of two semesters; or two consecutive full-time semesters on the Brigham Young University campus beyond the master's degree, as determined by the advisory committee.

Required Courses. Consult departmental brochure.

Secondary Education and Foundation Courses

514R. Special Topics in Education. (1-3:1-3:1 ea.)

- Educational Values
- Intro-teaching
- Individual Instruction
- Career Education

—*Secondary Methods

*This course will cover various phases of the subject matter, and title may change to fit the specific category.

536. Secondary Curriculum and Methods. (3:3:0)

Analysis of differences among the various curriculum and instructional patterns, emphasizing their impact on individualized learning.

547. Foundations of Reading. (3:3:0) Prerequisite: teaching certificate or consent of instructor.

600. Research Design in Education. (3:3:0) Prerequisite: graduate standing.

601. Comparative Current Educational Philosophy. (3:3:0)

603. Educational Classics and Contemporary Issues. (3:3:0)

606. History of Education in Europe and America. (4:4:0)

607. Education in a World Setting. (2:2:0)

608. Social Foundations of Education. (3:3:0)

612R. Supervision of Student Teachers. (1-3:Arr.:Arr. ea.) Prerequisite: teaching certificate.

620R. Master's Admission Seminar. (1-3:2:2 ea.) Prerequisite: provisional admission to the master's degree program.

627. Teaching Reading in the Curriculum. (2:2:0) Prerequisite: teaching certificate or consent of instructor.

Reading in the different content areas. Study of comprehension and study skills as developed in kindergarten through grade twelve.

632. Research and Literature in Reading. (2:2:0) Prerequisites: SecEd. 547 and 627.

Study of the history of reading, with emphasis on the research and current literature in the teaching of reading from kindergarten through grade twelve. Offered Summer 1977 and alternate years.

636. Secondary Curriculum and Methods: Design. (3:3:0) Prerequisite: SecEd. 536.

637. Organization and Supervision of Reading Programs. (2:2:0) Prerequisites: SecEd. 547, 627.

642. Methods of College Instruction. (3:3:0)

660. Research Design and Technical Writing in Education. (3:3:0) Prerequisite: Stat. 552.

A study of research techniques and designs in the field of education.

680R. Internship in Education. (2-6:0-6-18 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.

685. Supervision of Education. (3:3:0) Prerequisite: EdAd. 675.

The principles of supervision, curriculum, planning, and in-service training in the improvement of instruction.

690R. Seminar. (2:2:0 ea.) Prerequisite: consent of instructor.

691. Doctoral Admission Seminar. (1-2:2:0) Prerequisite: permission of department.

693R. Independent Readings. (1-5:Arr.:Arr. ea.) Prerequisite: consent of instructor.

696R. Independent Research. (1-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

727. Curriculum of the Public Schools. (2:2:0)

751. Research Design for Doctoral Dissertation. (2:2:4) Prerequisite: doctoral candidacy and Stat. 552 or equivalent.

780R. Internship in Education. (2-8:0-6-24 ea.) Prerequisite: consent of instructor eight weeks in advance of registration.

790R. Seminar. (2:2:0 ea.) Prerequisite: consent of instructor.

796R. Advanced Research. (2-4:Arr.:Arr. ea.) Prerequisite: consent of instructor.

799R. Dissertation. (Arr.) Prerequisite: SecEd. 751 or equivalent.

Engineering Sciences

Ph.D. Program in Engineering

Executive Committee. Hanks (chairman, 350-G ESTB), Heaton, Durrant, Berrett.

The Ph.D. program in engineering is an interdepartmental program administered by an executive committee of the engineering faculty. The course work offered in this program is listed separately under each of the four participating engineering departments (Chemical, Civil, Electrical, and Mechanical). The faculty consists of the graduate faculty of the four engineering departments.

The master's programs in engineering are administered by each department separately but are coordinated with the Ph.D. program for those who wish to continue beyond the master's level.

Program. Doctor of Philosophy (Ph.D.).

Entrance Examination Required. Qualifying examination. The student should contact the chairman of the Executive Committee for details.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Doctor of Philosophy

Prerequisites. B.S., B.E.S., or M.S. degree in engineering or the equivalent. Tool preparation: satisfactory completion of any one of the following:

Tool Requirement I

Tool Requirement II

Tool Requirement III, consisting of any one of the following:

1. Stat. 501 (5) plus any one of Stat. 337 (3), 502 (5), 531 (3), or 534 (3)
2. Stat. 421 (3) plus Stat. 501 (5)
3. Stat. 321 (3) or 332 (2), Stat. 421 (3), plus any one of Stat. 422 (3), 432 (3), 433 (3), or 541 (3)
4. Comput. Sci. 231 (3) and 580 (4)

Tool Requirement IV, consisting of 21 semester hours of mathematics (beyond and excluding Math. 111 or its equivalent) and/or computer science in any combination.

Fields. Chemical Engineering: Combustion, environmental control, fluid mechanics, nuclear engineering, thermodynamics.

Civil Engineering: Geotechnical engineering, structures and structural mechanics, transportation engineering, water resources, environmental engineering.

Electrical Engineering: Communications engineering, computer engineering, power engineering, solid-state electronics.

Mechanical Engineering: Applied mechanics, machine design, manufacturing, nuclear engineering, thermodynamics.

Requirements. Approximately 50 hours beyond bachelor's degree, plus dissertation (18-hr. min.—799R); 18 hours

must be minor; 12 semester hours of the minor in advanced mathematics in addition to tool requirements unless waived by committee.

Integrated Master's Programs

Specially scheduled programs are available to students who, before commencing their junior year, decide to obtain a master's degree. These programs integrate the work of the junior, senior, and graduate years into one program that has much better continuity than is possible if all requirements for the bachelor's degree had to be met by the end of the senior year. It is possible in these programs to obtain a much better foundation in mathematics, for example, before taking the more advanced courses, which gives the student the benefit of better preparation.

These integrated programs are available leading to the Master of Science or Master of Engineering degrees in chemical, civil, electrical, or mechanical engineering.

To enter one of these programs a student should immediately upon completion of his second year (four semesters), and generally no later than the completion of his third year, make application through his department chairman, setting forth on a form (which will be provided) the detailed plan of his program through to the completion of the requirements for his master's degree. This program will be approved by his chairman, his undergraduate dean, and the dean of the Graduate School. As the student commences his final year of work (the last 30 semester hours), he will apply for admission to Graduate School and, if qualified, will be formally admitted. Upon completion of all requirements for his baccalaureate degree, he will receive that degree whether or not he completes his master's requirements at the same time. He may receive both degrees simultaneously.

Chemical Engineering Science

Distinguished Professor. Hall.

Professors. Barker (chairman, 350-E ESTB), Christensen, Coates, Hanks (graduate coordinator, 350-G ESTB), Horton, Pope, Smoot.

Associate Professors. Glassett, Jackson, Wilson.

Assistant Professor. Bartholomew.

Programs. Master of Engineering (M.E.), Master of Science (M.S.). (Students anticipating doctoral work in this area see Doctor of Philosophy above.)

Entrance Examinations Required. U.S. citizens: none. Foreign nationals: Graduate Record Examination (verbal, aptitude, and advanced engineering). At the department's discretion, a special entrance screening examination may be required.

Application Consideration Dates. U.S. citizens: as received. Foreign nationals: April 1 each year.

Entry Times. U.S. citizens (M.E., M.S., or Ph.D.), foreign nationals having M.S. degree and seeking Ph.D.: any semester or term. Foreign nationals (master's level): Fall Semester only.

Master of Engineering

This degree is designed to provide advanced engineering training at the master's level with emphasis on management, design, and synthesis. This is partly accomplished by choice of courses and partly by the special project (3 hrs., 698R). Because no research project or thesis is required, the student does not receive special training for research work. Students desiring such training should consider the M.S. or Ph.D. programs.

Prerequisites. B.S. degree (or equivalent) in chemical engineering from an AIChE-accredited school. B.S. degree in other engineering, chemistry, physics, materials science, or metallurgy is acceptable for provisional admission. Consult departmental brochure for further details.

Fields. Combustion, environmental control, fluid mechanics, nuclear engineering, thermodynamics.

Minors Permissible. Option I or Option II.

Requirements. Minimum of 30 semester hours including special project (3 hr. min.—698R).

Required Courses. Chem. Eng. 673 (3), 675 (3), 677 (1), 681 (3), 691R (1 each semester), 698R (3 min.), Options/Minor (16-18).

For requirements for the Option/Minor special programs, see departmental brochure.

Master of Science

Prerequisites. B.S. degree (or equivalent) in chemical engineering from an AIChE-accredited school. B.S. degree in other engineering, chemistry, or physics is acceptable for provisional admission. Consult departmental brochure for further details.

Fields. Combustion, environmental control, fluid mechanics, nuclear engineering, thermodynamics.

Minors Permissible. Option I or Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. Chem. Eng. 673 (3), 675 (3), 677 (1), 681 (3), 691R (1 each semester).

For requirements of special programs, see departmental brochure.

Courses

510. Energy and Fossil Fuels. (3:3:0) Prerequisite: concurrent registration in Chem. Eng. 464 or special permission.

Energy sources and demands; energy processes, costs, and relation to environment; design applications and case studies, with emphasis on coal gasification and shale oil recovery.

520. Air Pollution Control. (3:3:0) Prerequisite: concurrent registration in Chem. Eng. 464 or special permission.

Investigation of causes and effects of air pollution; standards, criteria and legislation; dispersion, meteorology and atmospheric chemistry. Includes design project and use of impact statements.

550. Synthesis and Optimization of Chemical Processes. (3:3:0) Prerequisites: Chem. Eng. 464 or concurrent registration.

Synthesis of chemical processes from process components, together with process optimization, including economic factors.

582. Introductory Nuclear Engineering. (3:3:0) Prerequisites: Chem. 106 or 112; Math. 214; Physics 221.

Barker, Jackson

Principles and application of nuclear reactor design.

583. Nuclear Engineering. (2:2:0) Prerequisite: Chem. Eng. 582.

Barker, Jackson

Reactor design, including reactor physics, heat transfer, engineering materials, instrumentation, and control.

672. Advanced Fluid Mechanics and Rheology. (3:3:0) Prerequisites: Math. 645; Chem. Eng. 673.

Hanks

Proper formulation of constitutive equations; non-Newtonian flow, stability, turbulence, drag reduction, nonisothermal flow, and heat transfer. Offered on demand.

673. Transport Phenomena. (3:3:0) Prerequisites: Chem. Eng. 476; Math. 323.

Hanks, Smoot

General differential equations of conservation of mass, heat, and momentum; transport coefficients; turbulent flow; interphase transfer, etc.

674. Advanced Thermodynamics and Calorimetry. (2:2:0) Prerequisite: Chem. 561.

Christensen

Advanced thermochemistry, including application to measurement of heats of mixing, heat of reaction, equilibrium constant, etc. Offered on demand.

675. Thermodynamics of Multicomponent Systems. (3:3:0) Prerequisite: Chem. 561.

Christensen, Hanks, Wilson

Advanced course involving fundamental concepts and applications in first and second laws, equilibrium and stability, phase equilibrium, homogeneous and heterogeneous chemical equilibrium.

676. Advanced Diffusional Operations. (3:3:0) Prerequisites: Chem. Eng. 673; Chem. 561; Math. 323.

Pope, Wilson

General theory of differential and stagewise diffusional and separations operations; multicomponent distillation extraction, absorption; solution of complex problems; column design and instrumentation. Offered on demand.

677. Creative Skills in Chemical Engineering. (1:1:0)

Barker, Horton, Jackson

Application of creativity and prior course work to the solution of relevant open-end problems.

681. Kinetics and Catalysis. (3:3:0) Prerequisite: Chem. Eng. 478.

Bartholomew, Horton, Pope

Application of fundamental theories of chemical kinetics and transport phenomena to the design of chemical reactors.

683. Advanced Plant Design and Economics. (2:2:0) Prerequisite: Chem. Eng. 464.

Glassett, Pope

Comprehensive design of chemical plants including feasibility and market surveys, economic evaluations, raw materials, plant layout, process design, instrumentation, materials of construction. Offered on demand.

691R. Seminar for Master's Students. (1:1:0 ea.)

Technical presentations by graduate students, faculty members, and invited guests.

693R. Special Topics—Graduate. (1-3:Arr.:Arr. ea.)

Investigation of topics of special interest. Offered on demand.

698R. Special Problems—Graduate. (2-6:0:0 ea.)

699R. Thesis for Master's Degree. (Arr.)

☐ **Chemistry 769. Selected Topics in Physical Chemistry.** (1-3:1-3:0)

791R. Seminar for Doctoral Students. (1:1:0 ea.)

793R. Selected Topics in Chemical Engineering. (1-3: Arr.:Arr. ea.)

Courses taught in this class will be based on research interest of faculty and students and will include such subjects as kinetics and transport in reacting multicomponent flow systems with application to complex reactor systems, free jets, particle laden streams, plasmas, etc. Offered on demand.

799R. Dissertation for Doctoral Students. (Arr.)

Civil Engineering Science

Professors. C. Barton, J. Barton (chairman, 368 ESTB), Budge, Christiansen, Firmage, Fuhrman, Karren, Rolins, Stutz.

Associate Professors. Durrant (graduate coordinator, 368-B ESTB), Merritt, Wilson.

Assistant Professor. Miller.

Programs. Master of Science (M.S.), Master of Engineering (M.E.). (Students anticipating doctoral work in this area are referred to page 59 for details.)

Entrance Examination Required. Graduate Record Examination required for applicants from non-ECPD

(Engineers' Council for Professional Development)—accredited schools.

Application Consideration Dates. May 1 for Fall Semester; same as Graduate School deadlines for other semester and terms.

Entry Times. Any regular registration.

Master of Science

Prerequisites. A bachelor's degree in civil engineering or its equivalent. (Students with other backgrounds will also be considered.)

Fields. Geotechnical engineering, structures and structural mechanics, transportation engineering, water resources and environmental engineering.

Minors Permissible. Option I or Option II.

Requirements. Minimum of 25 semester hours plus thesis Civ. Eng. 699R (6-hr. min.).

Required Course. Civ. Eng. 691R (1).

Master of Engineering

Prerequisite. A bachelor's degree in civil engineering or its equivalent. (Students with other backgrounds will also be considered.)

Fields. Geotechnical engineering, structures and structural mechanics, transportation engineering, water resources and environmental engineering.

Minors Permissible. Option I or Option II.

Requirements. Minimum of 27 semester hours plus a project, Civ. Eng. 698R (3-hr. min.).

Required Course. Civ. Eng. 691R (1).

Courses

501. Advanced Mechanics of Materials. (3:3:0) Prerequisite: Civ. Eng. 303.

Introduction to strain energy methods; stresses and strains in beams, curved members, beams on elastic foundations, thick cylinders, and torsion and structural members.

502. Advanced Properties of Materials. (3:3:0) Prerequisite: Civ. Eng. 305 or equivalent.

Mechanics of deformation and fracture of solids; mechanical behavior of materials correlated with atomic scale mechanisms; creep, residual stresses; and fatigue.

503. Applied Elasticity. (3:3:0) Prerequisites: Civ. Eng. 303; Math. 321.

Analysis of stress and strain; equations of equilibrium and compatibility; generalized Hooke's Law; energy theorems.

505. Concrete—Its Materials, Uses, and Properties. (3:2:3) Prerequisite: consent of instructor.

Manufacture and testing of cements; concrete materials and concrete mix design; techniques of concrete handling, placing, and treatment; laboratory work.

507. Experimental Stress Analysis. (3:2:3) Prerequisite: Civ. Eng. 303.

Experimental methods of stress determination and their application to static engineering problems. Mechanical gages; brittle lacquers; electric resistance strain gages; photoelasticity and photostress techniques.

513. Photogrammetry. (3:2:3) Prerequisite: Civ. Eng. 212.

Use of terrestrial and aerial photographs to produce maps; vertical and oblique photography and mapping procedures; stereoscopic viewing and measurements for relative position of objects in three dimensions; photo interpretation; sources of errors.

527. Matrix Methods in Structures. (3:2:3) Prerequisite: Civ. Eng. 422.

Development of the stiffness and flexibility methods of structural analysis using linear algebra and the digital computer.

528. Finite Element Analysis. (3:3:0) Prerequisite: Civ. Eng. 527 or consent of instructor.

Development of finite elements for an elastic continuum; applications using matrix algebra; consideration of plates, shells, and frameworks using the digital computer.

531. Water Resources Engineering. (3:2:3) Prerequisites: Civ. Eng. 431, 432.

Principles of planning and basic design of hydroelectric, flood control, irrigation, drainage, and multi-purpose projects involving the utilization of water resources.

550. Water Quality Management. (3:3:0) Prerequisite: consent of instructor.

Philosophies, objectives, and methods of water quality management; impact of various uses on water quality; behavior of pollutants in receiving waters.

555. Sanitary Engineering Analysis. (3:1:6) Prerequisites: Civ. Eng. 451; Micro. 381; or equivalent.

Analytical techniques involved in chemical and biological analysis of the major organic and inorganic constituents of water, sewage, and industrial wastes.

561. Geometric Design of Highways. (3:3:0) Prerequisite: Civ. Eng. 461.

Theory and practice in highway design. Highway classification, design controls, and criteria. Location studies; design of vertical and horizontal alignment, cross-section, pavement, drainage, intersections, and interchanges. Multilane facilities.

565. Transportation in Urban Planning. (3:3:0) Prerequisite: consent of instructor.

Importance of transportation in urban development and planning. Street classification and function. Design elements of streets, intersections, and access drives. Transportation planning studies. Land use/transportation interrelationships.

573. (Civ.Eng.-Public Admin.) Introduction to Public Works Management and Engineering. (3:3:0) Prerequisite: consent of instructor.

A course designed to acquaint engineering, public administration, and related majors with the real-life engineering, economic, and management problems inherent in management of local, state, and federal public works.

610. Theory and Design of Plates. (3:3:0) Prerequisite: Civ. Eng. 303.

Theory and analysis of thin plates of moderate thickness; membrane theory; anisotropic considerations.

612. Structural Stability. (3:3:0) Prerequisite: Civ. Eng. 303.

Elastic and inelastic buckling of columns; analysis of beam columns; torsional-flexural buckling, and buckling of thin plates and cylindrical shells.

615. Structural Dynamics. (3:3:0) Prerequisite: Civ. Eng. 304.

The study of free and forced, damped and undamped, lumped parameter, and multiple-degree-of-freedom linear structures. Approximate methods for nonlinear structures; applications to frameworks and beams.

620. Advanced Structures—Theory and Design. (3:3:0) Prerequisite: Civ. Eng. 422.

Advanced topics in structural theory and design: arches, frames, continuous structures on elastic supports, plastic design theory.

621. Thin Shell Structures. (3:3:0) Prerequisites: Civ. Eng. 422, 424.

Theory and design methods related to domes, arches, solid plate, and hyper structures.

622. Design of Bridge Structures. (3:2:3) Prerequisites: Civ. Eng. 341, 422, 423, 424.

Design of bridge structures: floor systems, composite and continuous beams and girders, trusses, piers, and abutments.

623. Prestressed Concrete. (3:3:0) Prerequisites: Civ. Eng. 422, 424.

Basic theory of prestressed concrete, pre- and post-tensioning methods. Details of design and fabrication; applications to continuous structures.

625. Design of Multistory Structures. (3:2:3) Prerequisites: Civ. Eng. 341, 422, 423, 424, or consent of instructor.

Shear walls, floors, columns, frames, and foundations, using elastic and plastic methods. Frame response to lateral forces.

632. Advanced Hydrology. (3:3:0) Prerequisites: Civ. Eng. 431, 432 or equivalent.

Theory and application of advanced hydrologic principles to engineering design and investigations.

633. Hydraulic Design of Water Control Structures. (3:3:0) Prerequisite: Civ. Eng. 432.

Principles of design of dams and appurtenant works and other water-control structures.

634. Flow in Open Channels. (3:3:0) Prerequisite: Civ. Eng. 332.

Principles of water flow in artificial and natural open channels, and application to practical problems.

641. Advanced Soil Mechanics. (3:3:0) Prerequisites: Civ. Eng. 341, 442 or equivalent.

Advanced topics in soil mechanics including stress distribution in earth masses, the shearing strength of soils, consolidation theory, settlement analysis, stability of slopes, and the bearing capacity of soils.

643. Earth- and Rock-Fill Structures. (3:3:0) Prerequisite: Civ. Eng. 341 or equivalent.

Design and construction of earth- and rock-fill dams; selection of dam-sites; selection of materials; seepage and pore pressure studies; shearing strength data; stability analysis; construction controls.

644. Advanced Foundation Engineering. (3:3:0) Prerequisite: Civ. Eng. 641.

Foundation engineering techniques of subsurface investigation, determination of the allowable soil pressures for footings; design of spread footings; raft foundation; pile foundation.

646. Flow of Fluids through Porous Media. (3:3:0) Prerequisites: Civ. Eng. 332, 341.

Fluid flow in saturated and unsaturated anisotropic media. Darcy's Law and Navier-Stokes equations. Potential theory and conformal mapping; analog solutions.

652. Design of Water Treatment Works. (3:3:0) Prerequisite: Civ. Eng. 555 or equivalent.

Water purification and treatment for culinary, municipal, and industrial uses.

653. Design of Sewage Treatment Works. (3:3:0) Prerequisite: Civ. Eng. 451 or equivalent.

Design of sewage disposal and treatment works.

654. Industrial Waste Treatment. (3:3:0) Prerequisites: Civ. Eng. 451, 555, or equivalent.

Treatment and disposal of industrial wastes; studies of basic industries and their waste problems.

661. Traffic Engineering: Characteristics and Operations. (3:3:0) Prerequisite: Civ. Eng. 461 or equivalent.

Characteristics of motor-vehicle traffic; theory of traffic flow; freeway operations and traffic regulations; design of highways and parking facilities, at-grade intersections, interchanges, channelizations, parking lots and garages.

663. Pavement Design. (3:3:0) Prerequisite: Civ. Eng. 461 or equivalent.

Properties and selection of pavement components, including soils, stabilized soil, base, subbase, subgrade, and bituminous materials. Design of rigid and flexible pavements.

691R. Civil Engineering Seminar. ($\frac{1}{2}$:1:0 ea.)

694R. Selected Problems in Civil Engineering. (1-3:Arr.: Arr. ea.)

697R. Research in Civil Engineering. (2:Arr.:Arr. ea.)

698R. Directed Studies in Civil Engineering. (Arr.) Prerequisite: consent of instructor and/or master's graduate committee.

Investigation, study, and presentation of a technical engineering report in an area of civil engineering. The project must be approved by the graduate committee.

699R. Thesis for Master's Degree. (Arr.)

794R. Selected Topics in Civil Engineering. (1-3:Arr.: Arr. ea.)

797R. Research for Doctoral Students. (Arr.)

799R. Dissertation for Doctoral Students. (Arr.)

Electrical Engineering Science

Professors. Berrett (graduate coordinator, 457 ESTB), Clegg, Humphreys, Jonsson, Losee (chairman, 459 ESTB), Miner, Woodbury.

Associate Professors. Bearson, Bowman, Chaston.

Programs. Master of Science (M.S.), Master of Engineering (M.E.). (Students anticipating doctoral work in this area are referred to page 59 for details.)

Entrance Examinations Required. None, unless the undergraduate school is not accredited; then the student must submit results of the Graduate Record Examination (advanced test in engineering).

Application Consideration Dates. June 30 and Nov. 15.

Entry Times. Any regular registration.

Master of Science

Prerequisites. B. S. degree in electrical engineering from a recognized school (accredited by the Engineers' Council for Professional Development); or, with the consent of the department, a B.S. degree in an allied discipline. With a non-E.E. degree remedial work will generally be required.

Fields. Communication engineering, computer engineering, power engineering, solid-state electronics.

Minors Permissible. Option II only.

Requirements. Minimum of 24 semester hours (including 6 hours in mathematics and/or statistics) plus thesis (6-hr. min.—699R).

Recommended Courses. The following courses are recommended for the areas of specialization indicated:

Computer

Elec. Eng. 513
Elec. Eng. 521
Elec. Eng. 525
Elec. Eng. 526
Elec. Eng. 529

Other Courses from Math, Computer Science and Elec. Engineering

Power Systems

Elec. Eng. 360
Elec. Eng. 513
Elec. Eng. 531
Elec. Eng. 532R

Elec. Eng. 533
Elec. Eng. 537R
ChE 582

Solid-State Electronics

Elec. Eng. 513
Elec. Eng. 550
Elec. Eng. 551
Elec. Eng. 552R
Elec. Eng. 560

Communications

Elec. Eng. 513
Elec. Eng. 560
Elec. Eng. 561
Elec. Eng. 566
Elec. Eng. 664
Elec. Eng. 665

Master of Engineering

Prerequisites. B.S. degree at a recognized school (accredited by the Engineers' Council for Professional Development). If the school is not accredited, the student must submit results of the Graduate Record Examination (advanced test in engineering).

Fields. Communication engineering, computer engineering, power engineering, solid-state electronics.

Minors Permissible. Option II only.

Requirements. 27 semester hours (including 6 hours in mathematics and/or statistics) plus a project (3-hr. min.—697R).

Required Courses. See listing under Master of Science for each field of interest.

Courses

411. Feedback Concepts. (3:3:0) Prerequisites: Civ. Eng. 304; Math. 321; either Elec. Eng. 302 or 431; 304 or 341. Jonsson

431. Electrical Energy Conversion. (4:3:3) Prerequisite: Elec. Eng. 311.

Magnetic circuits, transformers, and energy conversion principles.

442. Electronic Circuits and Devices 2. (4:3:3) Prerequisite: Elec. Eng. 341.

450. Electrical Properties of Materials. (3:2:3) Prerequisites: Elec. Eng. 360, 442. Woodbury

513. Linear Systems. (3:3:0) Prerequisite: consent of instructor.

State-space and transform techniques in the analysis of linear systems.

521. Computer Arithmetic Techniques and Microprogramming. (3:3:0) Prerequisite: Elec. Eng. 320.

522R. Special Topics in Computer Systems. (1-3:Arr.:Arr.) Prerequisite: consent of instructor.

525. Advanced Switching and Logic Theory. (3:3:0) Prerequisite: Elec. Eng. 320.

Fault diagnosis, multiports, advanced algorithms, computer-aided digital system design, and iterative networks.

526. Computer Communication Systems. (3:3:0) Prerequisites: Elec. Eng. 320, 442.

Computer networks, I/O handling, digital data transmission techniques, synchronization, error coding, feedback communications, decision theory, likelihood, correlation, and orthogonal signals.

529. Computer Graphics and Real-Time Programming. (3:3:0) Prerequisite: Elec. Eng. 320.

Graphic input/output systems for digital computers; on-line and real-time hybrid systems.

531. Power Systems Analysis. (3:3:0) Prerequisite: Elec. Eng. 302 or completion of or concurrent registration in Elec. Eng. 431.

Polyphase circuits, transmission line constants, power system representation, generalized circuit constants, symmetrical components, and fault studies.

532R. Special Topics in Power Systems. (3:3:0) Prerequisite: Elec. Eng. 531.

533. Power Machinery and Equipment. (3:3:0) Prerequisite: Elec. Eng. 302 or 431.

Transformers; synchronous, induction, and DC machines; other power system devices.

537R. Advanced Control Machinery Laboratory. (1:0:3) Prerequisite: Elec. Eng. 411.

Experiments with electrical machinery, control systems, and power distribution systems.

541. Switching, Timing, and Pulse Circuits. (4:3:3) Prerequisite: Elec. Eng. 341.

Passive and active electronic circuits, with emphasis on nonlinear modes of operation.

542R. Special Topics in Electronics. (1-3:Arr.:Arr.) Prerequisite: consent of instructor.

550, 551. Physical Electronics. (3:3:0 ea.) Prerequisite: Physics 221. Recommended: Elec. Eng. 450.

Theory and applications of solid-state electronic devices, including Gunn and avalanche diodes, lasers, and magnetic and acoustical devices.

552R. Semiconductor Laboratory. (1-2:0:3-6 ea.) Prerequisite: completion of or concurrent registration in Elec. Eng. 450 or 550.

Experimental investigation of semiconductor materials, including basic measurements and construction of electronic devices.

560. Microwave Engineering. (4:3:3) Prerequisite: Elec. Eng. 360.

Application of electromagnetic field theory to microwave components and systems.

561. Communication Circuits. (4:3:3) Prerequisites: Elec. Eng. 360, 442.

Circuits and RF techniques used in communication systems.

593R. Special Topics in Electrical Engineering. (3:3:0 ea.) Prerequisite: consent of instructor.

Content varies from year to year. Recent developments in electrical engineering.

598R. Special Problems. (1-2:Arr.:Arr. ea.) Prerequisite: consent of instructor.

661. Advanced Electromagnetic Fields. (3:3:0) Prerequisite: Elec. Eng. 560.

Physical interpretation of electromagnetic fields. Mathematical methods of solving boundary value and other field problems.

663. Antenna Theory. (3:3:0) Prerequisite: Elec. Eng. 360.

An advanced viewpoint of radiation, terminal, and distributed properties of antenna structures.

664, 665. Communication Theory. (3:3:0 ea.) Prerequisite: consent of instructor.

Transmission through electric networks; periodic sampling; pulse modulation, analysis of information transmission systems; noise considerations.

697R. Master of Engineering Project. (3:Arr.:Arr. ea.) Prerequisite: consent of major professor.

One-semester project for Master of Engineering degree.

698R. Readings and Seminar. (1:1:0 ea.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr.) Prerequisite: consent of major professor.

791R. Seminar for Doctoral Students. (1:1:0 ea.)

794R. Selected Topics in Electrical Engineering. (1-3: Arr.:Arr.)

797R. Research for Doctoral Students. (Arr.)

799R. Dissertation for Doctoral Students. (Arr.)

Mechanical Engineering Science

Professors. Andersen, Cannon, Free, Heaton (graduate coordinator, 242-D ESTB), Polve, Simonsen (chairman, 242-C ESTB), Ulrich, Warner, Wille.

Associate Professors. Chase, Paxson.

Assistant Professor. Woolley.

Programs. Master of Science (M.S.), Master of Engineering (M.E.). (Students anticipating doctoral work in this area are referred to page 59 for details.)

Entrance Examinations Required. No special exams required of graduates of ECPD (Engineers' Council for Professional Development) accredited schools. Favorable consideration given to graduates of curriculums not accredited by ECPD who submit Graduate Record Examination scores in aptitude and advanced engineering tests. Also, for non-ECPD curriculum graduates, a screening exam is required after arrival to determine weaknesses that must be strengthened.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Engineering

Prerequisites. Bachelor's degree in mechanical engineering or, with the consent of the department, an allied discipline.

Fields. Applied mechanics, machine design, manufacturing, nuclear engineering, thermosciences.

Minors Permissible. Option I and Option II.

Requirements. Minimum of 30.5 semester hours including a project (3-hr. min.—698).

Required Courses. Mech. Eng. 510, 534, 540, 591R, Math. 322, 323, and Elec. Eng. 302, 303, or 304, 305.

This program is designed to provide the breadth of experience encountered by a practicing professional engineer. To increase flexibility in scheduling, a special program (Integrated Master's Program) is available in which a student may work on the B.S. and M.E. degrees simultaneously during the last three years (six semesters).

The details of the Integrated Master's Program are given in the introductory section of Engineering Sciences.

Master of Science

Prerequisites. Bachelor's degree in mechanical engineering or, with the consent of the department, an allied discipline.

Fields. Applied mechanics, machine design, manufacturing, nuclear engineering, thermosciences.

Minors Permissible. Option I and Option II.

Requirements. Minimum of 30.5 semester hours including thesis (6-hr. min.—699R).

Required Courses. Mech. Eng. 591R and 6 hours of mathematics beyond the level of ordinary differential equations.

This is a research-type program designed for students who plan a research or development career in engineering.

Courses

(See also related courses in other engineering and physical science offerings.)

□ Civil Engineering Science 501. Advanced Mechanics of Materials.* (3:3:0)

□ Civil Engineering Science 502. Advanced Properties of Materials.* (3:3:0)

510. Fluid Mechanics 2. (3½:3:2) Prerequisites: Math. 321; Mech. Eng. 412.

Compressible flow; shock effects; Fanno and Rayleigh lines; generalized one-dimensional flow.

511. Intermediate Gas Dynamics. (3:3:0) Prerequisite: Mech. Eng. 510.

Potential theory and Euler's equations. Supersonic and subsonic multidimensional flow. Method of characteristics; small perturbation theory; Hodograph theory, theoretical airfoil coefficients, etc.

512. Boundary Layer Theory. (3:3:0) Prerequisite: Mech. Eng. 412.

The stress tensor; Navier-Stokes equations; exact solutions for parallel flow; lubrication theory; Prandtl's equations; separation; Karman-Pohlhausen integral methods; applications.

515. Applied Aerodynamics and Flight Mechanics. (3:3:0) Prerequisite: Mech. Eng. 322.

An integrated picture of modern applied aerodynamics up to and including performance, stability, and control of aerospace vehicles.

521. Energy Resources and Conversion.* (3:3:0) Prerequisite: Mech. Eng. 322.

Survey of energy resources and design of systems for conversion of energy using the principles of thermodynamics.

531. Principles of Automatic Control.* (3:3:0) Prerequisites: Mech. Eng. 412, 534; Math. 321.

Transfer functions applied to mechanical, hydraulic, pneumatic, and electrical components and their combination. Block diagrams; Nyquist and Routh criteria; Bode's and root locus plots; integral and error rate compensation. Nonlinear systems.

533. Stress Analysis and Design of Mechanical Structures.* (3:3:0) Prerequisite: Civ. Eng. 303.

Methods of predicting stress and deflection; optimization of components; applications to vehicle and aerospace structure design; curved beams and rings; semi-monocoque structures.

534. Dynamic System Analysis and Modeling. (3½:3:2) Prerequisites: Math. 321; Civ. Eng. 304.

Lumped models of mechanical, electrical-mechanical, fluid, and thermal systems; graphic models; physical system response; digital and analog simulation.

535. Advanced Vibration Analysis.* (3:3:0) Prerequisites: Math. 321; Civ. Eng. 304.

Vibrations of systems with multiple degrees of freedom; vibrations of elastic bodies; random vibrations; simple nonlinear systems.

537. Advanced Kinematics.* (3:3:0) Prerequisite: Mech. Eng. 431.

Geometry of constrained motion, with application to point paths; kinematic synthesis; types of mechanisms.

540. Heat Transfer. (3½:3:2) Prerequisites: Mech. Eng. 321, 412; Math. 321.

Fundamentals of heat transfer; basic laws; conduction; convection; change of phase; radiation.

541. Advanced Heat Transfer. (3:3:0) Prerequisite: Mech. Eng. 540.

Heat transfer analysis by numerical and analog methods. Emphasis on radiation and conduction. Use of digital and analog computers, passive analogs.

542. Design of Heat-Transfer Systems.* (3:3:0) Prerequisite: Mech. Eng. 540.

Design of heat-transfer devices and heat-exchange systems associated with environmental temperature control, electronic cooling and aerospace vehicles.

552. Design and Materials Applications. (3:3:0) Prerequisites: Mech. Eng. 351, 454.

Applied and residual stresses; materials selection; static, impact, and fatigue strength; fatigue damage; surface treatments; elastic deflection and stability—all as applied to mechanical design.

554. Advanced Manufacturing Processes. (3:3:0) Prerequisite: Mech. Eng. 351 or consent of instructor.

Basic analysis of forming, machining, welding, and casting processes, with emphasis on microstructures. Selection of process parameters, with consideration of economics and material properties.

555. Mechanical Forming Methods.* (3:3:0) Prerequisite: consent of instructor.

A treatment of methods for calculating forces, velocities, and other physical parameters necessary to understand and design forming equipment such as extruders and rollers.

556. Advanced Physical Metallurgy.* (3:3:0) Prerequisites: Mfg. Tech. 335, Math. 223, or equivalent; or consent of instructor.

A continuation of Mfg. Tech. 335, including topics related to advanced material forming, molding, joining, and heat-treating processes.

572. Interdisciplinary Systems Design. (3:1:6) Prerequisite: Mech. Eng. 471.

Design projects emphasizing group project attack on contemporary problems. Interdisciplinary faculty and student participants.

581. Internal Combustion Engines.* (3:2:3) Prerequisite: Mech. Eng. 322.

Basic principles of spark-ignition and compression-ignition engines; actual cycles; performance characteristics; carburetion and ignition principles; detonation and combustion. Laboratory work with three advanced engine testing cells.

584. Design of Fluid Machinery and Propulsion Engines. (3:3:0) Prerequisite: Mech. Eng. 412.

Design and synthesis of radial and axial flow machines, pumps, and rocket, ramjet, and turbojet engines; applications of fluid flow and thermodynamic fundamentals.

591R. Seminar. (½:1:0 ea.)

Student and faculty presentation of topics of special and current interest.

593. Mechanical Engineering Practicum. (1-3:0:0) Prerequisite: minimum of 60 hours in mechanical engineering.

Technical elective credit given in recognition of at least two months of full-time, engineer-related, industrial experience. Planning document and formal report required.

595R. Special Topics in Mechanical Engineering. (Arr. ea.) Prerequisite: consent of department chairman.

611. Theories of Fluid Turbulence.* (3:3:0) Prerequisite: Mech. Eng. 412; Math. 322, 323.

An introductory study of fluid turbulence both theoretical and experimental, including statistical and phenomenological models and using the Reynolds convention applied to the classical flow equations.

612. Principles of Ideal-Fluid Dynamics.* (3:3:0) Prerequisites: Mech. Eng. 412; Math. 322, 323.

Analytical study of ideal-fluid hydrodynamics and aerodynamics. Topics include ideal-fluid assumptions, rotational and irrotational flow, acyclic and cyclic motion, circulation and lift.

637. Dynamics in Mechanical System Design.* (3:3:0) Prerequisite: Mech. Eng. 531 or 534.

Applied design analysis of complex systems needing evaluation of vibrations, transient response, and/or feedback control. Classical, modern, and computer techniques are included.

641R. Selected Topics in Heat-Transfer Theory.* (3:3:0 ea.) Prerequisite: Mech. Eng. 540.

Analysis of heat transfer in conduction, convection, or radiation.

651. Advanced Topics in Manufacturing.* (3:3:0) Prerequisite: Mech. Eng. 554 or consent of instructor.

Presentation and evaluation of the more advanced aspects of material behavior, forming, welding, casting, and machining.

661. Selected Topics in Solid Mechanics.* (3:Arr.:Arr.) Prerequisites: Civ. Eng. 303, Math. 323.

Three-dimensional equations of elasticity specialized to engineering problems including tensor notation, wave propagation, computer solutions, and rate-dependent and inelastic materials.

695R. Special Problems for Master's Students. (1-3:Arr.: Arr. ea.) Prerequisite: permission of department chairman.

Selected problems in mechanical engineering.

697R. Research.* (Arr. ea.)

698. Project for Master of Engineering. (3-5:0:Arr.) Prerequisite: fifth-year standing in mechanical engineering program.

A design or research project in support of the Master of Engineering program. To be completed in one semester.

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

791R. Seminar for Doctoral Students. (1:1:0 ea.)

795R. Selected Topics in Mechanical Engineering. (1-3: Arr.:Arr. ea.)

797R. Research for Doctoral Students. (Arr.)

799R. Dissertation for Doctoral Students. (Arr.)

*Electives offered on demand.

English

Professors. Brady, B. Clark, M. Clark, Cox, Craig, Farnsworth, Gassman, J. B. Harris (graduate coordinator, 242 JKBA), Hart, Jacobs, King, Larson, Monson, Tate, R. Thomas, Thomson, West, Wood.

Associate Professors. Arnold, B. Best, Blanch, Cracroft (chairman, 246 JKBA), Esplin, Evans, Geary, J. S. Harris, Lambert, Luthy, McKellar, McKendrick, Thayer, Thomas, Waterstradt, Williams, Wilson.

Assistant Professors. Hunsaker, Lynn, Walker, Wight.

Programs. Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required. Graduate Record Examination (verbal and advanced) or the senior comprehensive written examination of this department.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Undergraduate major or its equivalent (including one course in literary criticism, one course in history of the language, and one course in modern gram-

mar) and a reading knowledge of one foreign language, preferably French or German.

Fields. American literature, English literature, the English language.

Minors Permissible. Option I (any of the three fields not selected for the major or a related area, such as modern languages, linguistics, psychology, or comparative literature); Option II (permission of the departmental graduate coordinator required).

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R). Each student must enroll with his sponsor for one hour of Engl. 695R each Fall and Winter Semester until the thesis prospectus has been filed (only two hours of Engl. 695R will count toward graduation); thereafter he must enroll for one or more hours of Engl. 699R each Fall or Winter Semester.

Required Courses. Engl. 615; and 529 or 624 or 626.

Thesis. A student may select any one of the following four options:

1. A thesis on a topic demanding research, criticism, or both.
2. Three long papers written in three different areas of English or American language or literature and on topics demanding research, criticism, or both.
3. Two long papers written in two different areas of English or American language or literature and on topics demanding research, criticism, or both; and a substantial creative work.
4. An extended creative project as described below. A candidate who wants to apply for this option should inform the graduate coordinator of the English Department when he begins his work for the degree. He must comply with the regulations of the English Department and the Graduate School in the same way as other candidates.

To prepare for Option 3 the candidate must complete 2 hours of the following courses: Engl. 315, 316, 318, 319; or, if he is a transfer student, their equivalent. To prepare for Option 4 the candidate must complete at least 2 hours either as a graduate or undergraduate student in the English 300 writing series and at least 2 hours in Engl. 518R. His average grade for the required course or courses must be at least B. He must also submit samples of his current creative writing to the Writing Committee of the English Department, who, within a two-week period, will evaluate them and will recommend acceptance or rejection of the candidate's application. When the candidate for either option has been assigned an advisory committee, the committee will approve his creative project—which may consist of such forms as essays, a drama or dramas, librettos, short stories, a novella, a novel, or poetry—to satisfy the thesis requirement.

This program is designed to prepare students for Ph.D. work in English and teaching English on the junior college level.

Doctor of Philosophy

Prerequisites. A master's degree in English from an accredited graduate school. If the earlier degrees have not included formal course work in the following areas, these courses must be completed in addition to the other Ph.D. requirements: (1) "History of the English Language" (Engl. 421); (2) one of the following language courses: "Old English" (Engl. 624), "Middle English" (Engl. 626), or the "Structure of Modern English" (Engl. 529); (3) "Bibliography and Methods of Research" (Engl. 615); (4) "Literary Criticism" (Engl. 351 or Engl. 650). A reading knowledge of French and German (other languages may be substituted only with the written permission of the graduate coordinator of the English Department upon recommendation of the student's faculty sponsor).

Fields. American literature, English literature.

Minors Permissible. The field listed above not selected for the major, or a related area, such as comparative literature, history, language, linguistics, approved by the advisory committee.

Requirements. See competency statement of the Graduate School.

Required Courses. One hour enrollment in Engl. 695 each Fall and Winter Semester until prospectus has been filed; thereafter, one or more hours of Engl. 799. As arranged.

Courses

500R. Eminent American Writers. (1-3:1-3:0 ea.)

Different writers are treated each semester in this series.

510R. Eminent English Writers. (1-3:1-3:0 ea.)

Different writers are treated each semester in this series.

518R. Advanced Creative Writing. (2:2:0) Prerequisite: Engl. 318, 319, or consent of instructor. Larson, Thayer

A seminar in the writing of fiction, poetry, drama, and the essay; individual consideration of manuscript; professional orientation. May be repeated for credit with the consent of instructor.

520R. Studies in Theme and Form. (2-3:2-3:0 ea.)

An intensive study of limited literary topics (the theory of myth, Gothic fiction, Utopian literature, tragic or comic mode, etc.). Varies according to instructor.

529. Structure of Modern English. (3:3:0) Prerequisites: Engl. 321; Ling. 325; or consent of instructor. Luthy

Application of the methods of linguistic science to the description of the phonology, morphology, and syntax of modern English.

590R. Individual Readings in English. (1-3:2-8:0 ea.)

Intended for investigation beyond course work. Also offered for majors and students on foreign tours. Available only through approval of sponsor and graduate coordinator.

599R. Cooperative Education: Editorial Internship. (Arr.: 0:20-40 ea.) Prerequisite: one or more semesters as a graduate teaching assistant in English.

615. Bibliography and Methods of Research. (2:2:0)

Gassman, J. Thomas
The use of library resources as tools for literary study and an introduction to various areas in which literary research may be pursued. To be taken in the first regular semester of graduate study.

621R. Problems in the English Language. (3:3:0 ea.) Prerequisite: Engl. 421. McKendrick

The study of a particular period in the English language or a particular aspect of the language, such as the study of morphology or syntax.

624. Old English. (3:3:0) McKendrick, Monson

A study of Old English grammar and vocabulary in order to understand traditional syntactical patterns and to read various types of Old English prose and poetry.

625. Beowulf. (2:2:0) Prerequisite: Engl. 624.

McKendrick
A close reading of the poem in the original, with emphasis upon literary and cultural values.

626. Middle English. (3:3:0) Lynn, McKendrick, Monson

A detailed study of the principal Middle English dialects as illustrated in the literature of the period.

631. The English Novel. (3:3:0) Prerequisites: Engl. 332, 333, or consent of instructor.

Brady, B. Clark, Gassman, Wight

An intensive analysis of literary values and techniques in selected novels. Not a survey course.

- 635. The American Novel. (3:3:0)** Arnold, M. Clark, Cracrott, Jacobs, McKellar

Various approaches to the novel with emphasis on the formal. Focus may vary according to the instructor and the needs of students.

- 641. The English Drama. (3:3:0)** Craig

A short intensive survey of English drama from its beginning, followed by independent research.

- 650. Literary Criticism. (3:3:0)** Prerequisite: Engl. 351 or equivalent. Brady, M. Clark, Hart, Larson

An examination of modern critical theory and practice and application by students to specific literary works.

- 651R. Studies in Poetry. (3:3:0)** Hart, Larson

- 652R. Studies in Prose Nonfiction. (3:3:0)** Hart, J. Thomas, Thomson

- 661. Colonialism and Puritanism in American Literature. (3:3:0)** Prerequisite: Engl. 361 or consent of instructor. Thomson

Intensive readings in major writers of the emerging American literary and cultural traditions before 1800.

- 662. Romanticism in American Literature. (3:3:0)** Prerequisite: Engl. 361 or consent of instructor. Ellsworth, Jacobs, Thomson

The rise and fruition of the romantic movement in American literature from Freneau to Lowell.

- 663A,B,C,D,E. Studies in Regional American Literature. (3:3:0).** Prerequisite: a general background in American literature. Cracrott, Lambert, Thomson

Focus on a different region each time offered.

- 664. Realism and Naturalism in American Literature. (3:3:0)** Prerequisite: Engl. 362 or consent of instructor. M. Clark, Cracrott, Jacobs, Lambert

Dominant cultural and aesthetic trends since the Civil War.

- 666. American Literature, 1900-1950. (3:3:0)** Prerequisite: at least one course in modern American literature. M. Clark, Evans

- 667. Folklore. (2:2:0)** Prerequisite: Engl. 391 or 392 or consent of instructor. Wilson

Directed study in folklore and folkways, with emphasis on the Mormon heritage and tradition. Collecting, analyzing, and editing.

- 669. Teaching English in the Secondary Schools. (2:2:0)** Prerequisite: Engl. 377 or consent of instructor. West

Intensive consideration of literature, writing, grammar, and reading materials appropriate to English courses, and the effective use of these materials.

- 671. The Medieval Period in English Literature. (2:2:0)** Lynn, McKendrick

A close reading in the original of a principal work, such as *Troilus and Criseyde*, *Piers Plowman*, or *Sir Gawain and the Green Knight*, with emphasis upon its relation to the other literature, the culture, and the history of the period.

- 672. The Renaissance in English Literature. (3:3:0)** Prerequisite: Engl. 372 or consent of instructor. Esplin, Hunsaker, Tate, J. Thomas, Wood

Research in individual authors, styles, influences, and trends. Emphasis will vary according to instructor.

- 673. Classicism in English Literature. (3:3:0)** Prerequisite: Engl. 373 or consent of instructor. Gassman, Hart

An in-depth study of selected writers from the period 1660-1780.

- 674. Romanticism in English Literature. (3:3:0)** Prerequisite: Engl. 374 or consent of instructor. B. Clark, J. B. Harris

An intensive review of the major figures and trends in the romantic period (1780-1832), along with individual research.

- 675. The Victorian Age in English Literature. (3:3:0)** Prerequisite: Engl. 375 or consent of instructor. B. Best, Brady, B. Clark, Walker

A detailed analysis of literary genres, values, and techniques in representative works of the period. Not a survey course.

- 676. British Literature, 1900-1950. (3:3:0)** Prerequisite: at least one course in modern British literature. Geary, Wight

- 680. Contemporary Literature. (3:3:0)** Prerequisite: at least one course in twentieth-century literature, or consent of instructor. Arnold, M. Clark, Evans, Hart, Larson

Study of specific trends in literature and criticism; students may select areas of interest.

- 682. Problems in Shakespearean Scholarship and Criticism. (3:3:0)** Prerequisites: Engl. 382, 582, or consent of instructor. Brady, Hart

- 695R. Individual Studies in English. (Arr.)**

One hour enrollment each Fall and Winter Semester required until prospectus has been filed; thereafter, one or more hours of Engl. 699R.

- 699R. Thesis for Master's Degree.* (Arr.)**

See options described with master's program in English above.

- 728R. Studies in Rhetoric and Style. (3:3:0 ea.)**

- 799R. Dissertation for the Ph.D. Degree.* (Arr.)** Prerequisite: approval of the candidate's chairman.

*See section of this catalog entitled Continuous Registration.

Family Studies

Professors. H. Bahr, Bradford, Burr (director), Christiansen, Kunz, Moss, Rollins.

Associate Professors. Albrecht, S. Bahr, Chadwick, Condie, Olson, Price, Thomas.

Assistant Professors. Galbraith, McKee.

Programs. The Family Studies Program is an interdepartmental Ph.D. program sponsored by the CDFR and Sociology departments. Students in this program can major in CDFR or sociology or they can have majors in both CDFR and sociology (a dual major).

Entrance Examinations Required. Graduate Record Examination, including aptitude tests and advanced sociology or psychology aptitude tests if students have majored in these areas. Students applying for admission must also submit samples of their written work.

Application Consideration Dates. February 1 each year. Since applications have to be processed through the Graduate School before they come to the program and departments, students should submit them well before the February 1 deadline. Only when there are very unusual circumstances are students admitted at other times.

Entry Times. Usually Fall Semester, but other times are also permitted.

Prerequisites. A master's degree or the equivalent.

Minors Permissible. Any minor field approved by the advisory committee.

Additional Information. For additional information about requirements, courses, examination procedures, etc., see the listings under the two departments or write to Family Studies Program, 203 SFLC.

Food Science and Nutrition

Professor. Bennion.

Associate Professors. Hill (chairman, 2218-B, SFLC), Johnson (graduate coordinator 2218-E).

Assistant Professors. Freeman, Walker.

Program. Master of Science (M.S.).

Entrance Examinations Required. None.

Application Consideration Dates. April 1 and October 15.

Entry Times. Fall or Winter semester.

Master of Science

Prerequisites. Undergraduate major in food science and nutrition or a closely related field, with basic courses in the physical and biological sciences.

Fields. Food science and nutrition.

Minors Permissible. Biochemistry recommended; other minors available in consultation with major professor; Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.); a statistics course.

Required Courses. Nutrition: FSN 635, 636, 637, 691; Food Science: FSN 652, 654, 656, 690.

These programs are designed to prepare students for Ph.D. work in nutrition or food science, for college teaching, and/or for positions in industry.

Courses

635. Protein and Amino Acid Nutrition. (3:3:0) Prerequisite: FSN 435 or equivalent. Offered Fall Semester.

636. Energy Balance and Vitamin Nutrition. (3:3:0) Prerequisite: FSN 435 or equivalent. Offered Winter Semester.

637. Mineral Nutrition. (3:3:0) Prerequisite: FSN 435 or equivalent. Offered Spring Term.

652. Carbohydrates and Their Reactions in Foods. (3:3:0) Prerequisite: FSN 450 or equivalent.

Sugars, higher saccharides, starches, pectins, gums, hemicelluloses, and celluloses; and their derivatives: functions and reactions in foods.

654. Proteins and Their Reactions in Foods. (3:3:3) Prerequisite: FSN 450 or equivalent.

Plant and animal proteins, their functions and changes during food processing; food enzyme properties.

656. Food Lipids and Their Reactions. (3:3:3) Prerequisite: 450 or equivalent.

Lipids and their derivatives; reactions and functions in food processing.

690. Seminar in Food Science. (1-2:1-2:0)

691. Seminar in Nutrition. (1-2:1-2:0)

697R. Research. (1-3:Arr.:Arr. ea.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr.)

Geography

Professor. Layton (chairman, 167-D HGB).

Associate Professors. Grey, Horiuchi, Hudman, Jackson, Stevens.

Program. Master of Science (M.S.).

Entrance Examination Required. Graduate Record Examination (general and advanced section on geography).

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. Undergraduate minor in geography or its equivalent. Students going into area studies should have a strong language background. Those emphasizing planning, cartography, or geography in business or industry should have background in mathematics or statistics.

Fields. Cartography, general geography, urban and regional planning.

Minors Permissible. Option I or Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. Geog. 601, 620, 630, 698R, 699R.

This program is designed to provide a general background at the graduate level for either a terminal degree or preparation for more advanced work, and to allow specialization according to the student's specific interest in a particular area within the discipline.

Courses

501. Geography for Teachers. (3:3:0)

A systematic approach to the fundamentals of geography, emphasizing source materials, teaching methods, tools, and techniques.

502R. Seminar in Regional Geography. (2:2:0 ea.)

504. Geographic Field Techniques. (2:1:2)

Experience is geographic field techniques applied to physical, social, and biological sciences.

512. Cartography. (3:1:4) Prerequisite: Geog. 312.

520. Spatial Analysis. (3:3:0) Prerequisites: Sociol. 205 or 206 or Stat. 221.

Application of quantitative and location-allocation models to determine and account for location of economic, social, religious, and public institutions in their service regions.

522. Urban Geography. (3:3:0)

Distribution of urban areas, their development, internal land use patterns, and functions in the world's economy.

533. Industrial Geography. (3:3:0)

A systematic analysis of major industries in the United States with emphasis on planning and industrial location theory.

580. Geography of Underdeveloped Areas. (2:2:0)

Physical, economic, and human geography as it affects the world's underdeveloped areas, with emphasis on future development possibilities.

598. Seminar in Techniques of Research and Presentation. (2:2:0)

A proseminar in the scholarly use of geographical sources, leading to a substantial paper in oral and written form.

599R. Cooperative Education. (Arr.)

601. Physical Geography. (2:1:2)

620. Cultural Geography. (2:1:2)

630. History and Philosophy of Geography. (2:2:0)

The development of geographical thought. Major concepts concerning the nature, scope, and methodology of the discipline.

690R. Readings. (1:0:2 ea.)

695. Special Problems. (1-2:1-2:0)**698R. Seminar in Systematic Geography.** (2:2:0 ea.)

A detailed investigation of selected aspects of systematic geography.

699R. Thesis for Master's Degree. (6-9:Arr.:Arr.)

Geology

Professors. Best (graduate coordinator, 146-B ESC), Bissell, Brimhall, Bullock, Bushman, Hamblin, Hintze, Petersen (chairman, 274 ESC), Phillips, Rigby.

Associate Professors. Baer, Miller.

Programs. Master of Science (M.S.), Master of Arts in earth sciences (M.A.), Doctor of Philosophy (Ph.D.).

Application Requirements. Scores on Graduate Record Examination—verbal, quantitative, and advanced geography.

Entrance Requirements. A departmental exploratory examination may be given during first week of enrollment.

Application Consideration Dates. Same as Graduate School deadlines. Application for teaching assistantships and other financial aid for the following school year must be received by the Geology Department before March 1.

Entry Times. Fall or Winter semesters only.

Student Load Limits. The normal load for a student who is not working is 12 hours per semester or 6 hours per term. The maximum allowable load for student teaching assistants working 20 hours a week is 10 hours per semester. For those working 10 hours a week, the maximum credit load is 12 hours.

Master of Science

Prerequisite. Undergraduate degree in physical or biological sciences. Arrangements to make up any undergraduate deficiencies will be made in consultation with the Geology Department graduate coordinator.

Fields. Economic geology; mineralogy, geochemistry, and petrology; paleontology; stratigraphy and sedimentation; structural and field geology.

Minors Permissible. Option I or II.

Requirements. Minimum of 24 semester hours plus a published thesis (6-hr. min.—699R).

Required Course. Geol. 512, "Geology of North America."

Master of Arts

Prerequisite. Undergraduate degree in physical or biological sciences. Arrangements to make up any undergraduate deficiencies will be made in consultation with the Geology Department earth science coordinator.

Field. Earth science teaching.

Minors Permissible. Any combination of physical or biological science courses listed below.

Requirements. (1) a minimum of 12 hours in geology and 12 hours from the associated fields of astronomy, botany, chemistry, geography, mathematics, physics, zoology; (2) a comprehensive written examination of graduate course work prior to the thesis defense; (3) a thesis representing research work in the field of earth science under faculty adviser's supervision for a total of 6 hours; (4) a final oral examination on the research thesis.

Required Courses. Selections are to be made from the following courses:

Geol. 507, 510, 512, 540, 577, 584, plus upper-division courses not previously taken
Bot. 321, 331, 440, 455, 510, 526, 539, 550
Chem. 351, 352, 353, 514, 598
Geog. 405, 601
Math. 300, 301, 302, 371, 501, 502, 629
Physics 300, 527, 528, 536, 537
Zool. 321, 325, 457, 543, 545, 546, 547, 591R, 601

Doctor of Philosophy

Prerequisites. Master's degree in geology or equivalent course work.

Fields. Economic geology; mineralogy, geochemistry, and petrology; paleontology; stratigraphy and sedimentation; structural and field geology.

Minors Permissible. Outside the department or fields within the department, as approved by the applicant's committee.

Requirements. Approved courses, demonstrated competence in research, and a dissertation (18-hr. min.—799R).

Required Course. Geol. 512, "Geology of North America."

Courses

411. Geomorphology. (3:2:2) Prerequisite: Geol. 112. Hamblin

451. Optical Mineralogy. (3:2:2) Prerequisite: Geol. 351. Phillips

460. Economic Geology. (3:2:2) Prerequisite: Geol. 352. Bullock

470. Stratigraphy and Sedimentation. (3:2:2) Prerequisite: Geol. 325. Bushman

480. Introduction to Paleontology. (3:2:2) Prerequisite: Geol. 112. Petersen

502. Geology for Teachers. (2:2:0) Prerequisites: Geol. 101 and 102, or 103, or 111. Bushman
Designed to aid junior and senior high school earth science teachers. Materials and methods useful for the classroom.

507. History of Geology. (2:2:0) Bushman
Historical development of concepts and philosophy distinctive to geology. Offered 1976-77 and alternate years.

510. Conducted Field Trips. (1-3:Arr.:Arr.) Prerequisite: Geol. 101, 103, or 111.

Visits to and explanations of a variety of geologic features spectacularly displayed in the Intermountain West. Credit varies with number and length of trips in which student participates, but, in general, 30 hours will be spent in the field for each credit hour. Maximum credit allowable is 3 hours.

512. Geology of North America. (4:3:2) Rigby
A region-by-region study of the areal geology, physiography, and geologic development of Canada, the United States, and Mexico.

515. Photogeology. (3:1:4) Hintze
Techniques useful to practicing geologists; use of parallax bar and various instruments applicable to contact print photos.

520. Petroleum Geology. (4:4:0) Baer
Offered 1977-78 and alternate years.

535. Groundwater. (4:4:0) Hintze
Offered 1976-77 and alternate years.

- 540. Plate Tectonics.** (3:3:0) **Best**
Survey of physics of earth's interior and its bearing on plate tectonics.
- 544. Geochemistry Laboratory.** (2:1:2) **Prerequisite:** consent of instructor. **Brimhall**
Use of spectroscopic instruments for acquisition of chemical and isotopic data on geological materials.
- 545. Geochemistry.** (3:3:0) **Prerequisite:** consent of instructor.
Geological materials and processes from a chemical point of view. Offered 1976-77 and alternate years.
- 551. Advanced Mineralogy.** (3:2:2) **Prerequisites:** Geol. 351 and 451; Physics 202 or 213. **Phillips**
Crystallography, structure, and crystal chemistry of major mineral groups studied by X-ray diffraction and other methods.
- 552. Igneous and Metamorphic Petrography.** (3:1:4) **Prerequisites:** Geol. 352 and 451. **Best**
Bearing of textures and mineral associations on history of rock bodies.
- 561. Ore Deposits.** (4:4:0) **Prerequisite:** Geol. 460. **Bullock**
Metallic ore deposits—their origin, classification, and distribution, emphasizing major ore deposits of the United States.
- 562. Industrial Minerals and Rocks.** (3:3:0) **Prerequisite:** Geol. 460. **Bullock**
Occurrence, distribution, and use of nonmetallic earth materials. Offered 1976-77 and alternate years.
- 563. Mining Geology.** (3:3:0) **Prerequisite:** Geol. 460. **Bullock**
Ore search and appraisal; assembling geological data; mining techniques; and ore treatment. Offered 1977-78 and alternate years.
- 574. Principles of Stratigraphy.** (3:3:0) **Prerequisite:** Geol. 470. **Bissell**
Offered 1976-77 and alternate years.
- 575. Precambrian and Paleozoic Stratigraphy.** (3:3:0) **Hintze**
Synthesis of regional stratigraphic relations in North America. Offered 1976-77 and alternate years.
- 576. Mesozoic and Cenozoic Stratigraphy.** (3:3:0) **Rigby**
North American Mesozoic and Cenozoic rocks and key fossils. Offered 1976-77 and alternate years.
- 577. Oceanography.** (3:3:0) **Prerequisite:** Geol. 470. **Hamblin**
Oceanic processes, shoreline topography, sedimentary patterns, and sea floor features. Offered 1977-78 and alternate years.
- 580. Invertebrate Paleontology (Protozoans through Brachiopods).** (4:3:2) **Rigby**
Morphology, paleoecology, evolution, and stratigraphic significance of invertebrates. Offered 1977-78 and alternate years.
- 581. Invertebrate Paleontology (Mollusks through Hemichordates).** (4:3:2) **Petersen**
Continuation of Geol. 580. Offered 1977-78 and alternate years.
- 582. Biostratigraphy.** (3:2:2) **Prerequisite:** Geol. 480 or 581. **Petersen**
Fossils in their stratigraphic setting and principles of paleontologic chronology. Offered 1977-78 and alternate years.
- 583. Palynology.** (3:2:3) **Prerequisites:** Bot. 105; Geol. 480. **Bushman**
Modern and fossil palynomorphs—their preparation, identification, and application to stratigraphic and paleoecologic problems. Offered 1976-77 and alternate years.
- 584. Vertebrate Paleontology.** (4:3:2) **Prerequisites:** Geol. 112 or 103; Zool. 105 or Bio. Agr. Ed. 201. **Miller**
A history of vertebrate fossils and the environments they occupied. Field trips required.
- 591R. Seminar.** (1:1:0 ea.)
- 655. Igneous Petrology.** (4:3:2) **Prerequisite:** Geol. 552. **Best**
Origin and crystallization behavior of magmas, with emphasis on crystal-liquid relations in simple experimental systems. Offered on demand.
- 656. Metamorphic Petrology.** (3:2:3) **Prerequisites:** Geol. 552. **Best**
Subsolidus mineral equilibria; thermodynamic concepts; geologic variables in metamorphic systems; graphical analysis of mineral assemblages. Offered on demand.
- 670. Sedimentation and Sedimentary Tectonics.** (3:2:2) **Bissell**
Offered 1976-77 and alternate years.
- 671. Sedimentary Petrology—Carbonate Rocks.** (3:2:2) **Bissell**
Offered 1977-78 and alternate years.
- 672. Sedimentary Petrology—Clastic Rocks.** (3:2:2) **Prerequisite:** Geol. 470. **Hamblin**
Offered 1977-78 and alternate years.
- 680. Micropaleontology.** (3:2:2) **Prerequisite:** Geol. 480 or 581. **Rigby**
Geologically important microfossils, including conodonts, ostracodes, and foraminifera. Offered 1976-77 and alternate years.
- 685. Paleoecology.** (4:3:2) **Prerequisite:** Geol. 480 or 581. **Rigby**
Ancient environments and ecology of major taxonomic groups. Offered 1977-78 and alternate years.
- 696. Reading and Conference in Geology.** (1:4:1-4:0)
- 697R. Directed Field Studies.** (1-6:Arr.:Arr. ea.)
- 698. Research.** (1-4:1-4:0)
- 699R. Thesis for Master's Degree.** (6-9:Arr.:Arr. ea.)
- 797R. Directed Field Studies.** (1-6:Arr.:Arr. ea.)
- 799R. Dissertation for Doctor of Philosophy Degree.** (Arr.)

Health Sciences

Professors. Shaw (college coordinator, 221-F RB), Waters (chairman, 213 RB).
Associate Professors. Burgener, Hafen, Heiner, Hurley, Rhodes, Rollins, Thygeson.
Assistant Professor. Salazar.

Programs. Master of Science (M.S.), Master of Health Education (M.H.Ed.).

Entrance Examination Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry times. Any regular registration.

Master of Science

Prerequisites. Community health: an undergraduate major or a minimum of 20 hours in community health courses.

Health education: an undergraduate major or minor (minimum, 20 hours or equivalent) in health science.

Safety education: an undergraduate major or a minimum of 20 hours in health science and/or safety education.

Fields. Community health, health education (with emphasis in school health), safety education.

Minors Permissible. Option I or II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.); a written comprehensive coursework examination.

Required Courses. Community health: Health 692, 551, 670, Stat. 552.

Health education: Health 692, Stat. 552.

Safety education: Health 525, 692, Stat. 552.

Master of Health Education

Prerequisites. Community health: an undergraduate major or a minimum of 20 hours in community health courses.

Health education: an undergraduate major or minor (minimum, 20 hours or equivalent) in health science.

Safety education: an undergraduate major or a minimum of 20 hours in health science and/or safety education.

Fields. Community health, health education (with emphasis in school health), safety education.

Minors Permissible. Option I or II.

Requirements. Minimum of 32 semester hours; a written comprehensive coursework examination.

Required Courses. Community health: Health 692, 551, 670, Stat. 552.

Health education: Health 692, Stat. 552.

Safety education: Health 525, 692, Stat. 552.

Courses

501R. Health Education Workshop. (1-3:Arr.:Arr. ea.)
Watters

A presentation of selected health education problems, followed by discussions. Conducted on a workshop basis.

502R. Driver and Safety Education Workshop. (1-3:Arr.:Arr. ea.) Prerequisite: certified driver education instructor or consent of department chairman.

Presentation of current safety education problems, research, and methods of instruction.

503R. Health Problems Workshop. (1-3:Arr.:Arr. ea.)
Current problems in school and community health.

525. Countermeasures for Accident Control. (2:2:0)
Thygeson

Magnitude of the accident problem, epidemiology, role of public agencies, and evaluation of countermeasures for accidents.

☐ **Microbiology 531. Virology.** (4:2:6)

☐ **Zoology 535. Medical Entomology.** (2:1:2)

☐ **Educational Psychology 545. Counseling and Guidance Services.** (2:2:0)

551. Fieldwork in Community Health. (Arr.) Recommended: Health 451.
Burgener

Designed to broaden understanding of community health agencies, their roles, programs, and relationships.

☐ **Statistics 552. Statistical Methods in Education I.** (3:3:0)

552. School Health, Organization, and Services. (2:2:0)
Shaw

Considers desirable school health services and functions and relationships to public education and education law. Coordinates school health services with community programs.

☐ **Statistics 552. Statistical Methods in Education.** (3:3:0)

☐ **Educational Psychology 501. Educational Tests and Measurements.** (3:3:0)

561. Health of the Body Systems. (3:3:0) Rhodes
Advanced course in personal health, dealing with the major factors in health and disease as they involve the several body systems.

☐ **Physical Education 635. Research Design in Physical Education.** (2:2:1)

☐ **Educational Psychology 647. Laboratory in Counseling Practice.** (1:0:2)

650. Preservation of Human Health. (3:3:0) Prerequisite: Health 451 or equivalent.
Hafen

An epidemiological approach to the cause, nature, extent, and trends in the deterioration of human health.

651. Community Organization for Health. (3:3:0)
Hurley

Nature of voluntary health organizations, current research in community school organization, and relationship of school health programs to community.

660. Body Responses to Health and Disease. (2:2:0) Prerequisite: Health 561 or equivalent.
Rhodes

The physiology and biological chemistry of stimulants and depressants.

☐ **Physical Education 662. Administration and Public Relations.** (3:3:0)

☐ **Zoology 662. Advanced Physiology I.** (2:1:2)

670. Environmental Health. (2:2:0) Burgener
Emphasis on educational practices that relate to improving the environmental approach.

671. Graduate Practicum. (1:1:0) Watters
Analysis of the role and functions of the college health teacher. Supervised experience in teaching and research.

672. Social Hygiene. (2:2:0) Heiner
Designed to prepare a prospective teacher to instruct in family life education as it relates to health. Emphasis on the area of sexual maturation, family health problems, parenthood, and other social hygiene factors.

692. Research Methods in Health Sciences. (3:3:0)
Shaw

694. Seminar in Readings. (2:2:0) Watters

696R. Independent Studies. (1-3:Arr.:Arr. ea.) Watters

699R. Thesis for Master's Degree. (6-9:Arr.Arr.)

☐ **Education 709. Comprehensive Planning in Education.** (3:2:2)

History

Professors. Addy, Alexander (graduate coordinator, 488 HBLL), Allen, Arrington, Campbell, Hyer, Jensen, Warner (chairman, 250 MSRB).

Associate Professors. Britsch, Cardon, Flammer, Hill, Marlow, Montgomery, Tobler, Wood.

Assistant Professors. Chandler, Fox, Holmes, Pixton, Seibt, Stewart, Thorp.

Programs. Master of Arts (M.A.), Master of Arts for Teachers of History (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Requirements. A grade-point average of 3.0 over the last 60 hours and satisfactory recommendations are required. In addition, those entering the M.A. for teachers of history must be currently under a teaching contract. At least two letters of recommendation must be submitted from persons familiar with the student's academic qualifications, preferably from

professors who have had him as a student. Each applicant must submit an example of his written work, such as a Hist. 490 paper, or take the verbal portion of the Graduate Record Exam. Beginning Winter Semester 1976, all students will be admitted on a provisional basis. Each student must then be recommended to the department's graduate faculty by a sponsor and receive departmental approval before advancement to full degree-seeking status.

Application Consideration Dates. Same as graduate school. Applicants for graduate assistantships for Fall Semester must have applications to department by April 1.

Entry Times. Any regular registration.

Thesis Prospectus. The thesis prospectus for both the M.A. and Ph.D. must be defended at a meeting of the student's committee before it can be approved for submission to the graduate school. The committee may, at its discretion, ask the student to use a format other than that prescribed by the Graduate School.

Master of Arts

Prerequisites. An undergraduate degree in history or equivalent.

Fields. History of Asia (with Asian Studies), American history, modern European history, Latin American history (with Latin American Studies), ancient history, Medieval history, history teaching.

Minors Permissible. Option I or II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Course. One semester in thesis field.

Master of Arts for Teachers of History

Prerequisites. An undergraduate degree in history or equivalent and a current teaching contract.

Requirements. Minimum of 36 hours of credit approved as follows: graduate education, 9 hours; history, 21 hours; professional education project (PEP), 6 hours. Consult committee for specific requirements in each area.

Required Courses. SecEd. 536, 636, 680R, Hist. 500R.

Doctor of Philosophy

Prerequisite. A master's degree in history or the equivalent.

Fields.

Group I. General Fields

- A. American history
- B. Ancient history
- C. Medieval history
- D. Modern European History
- E. History of Asia
- F. Latin American history

Group II. Areas of Specialization

- A. American history
 1. Colonial history to 1789
 2. U.S. national, 1783-1877
 3. U.S., 1877 to present
 4. The frontier and western America
 5. History of religion in America
- B. Ancient history
 1. Greek history
 2. Roman history
- C. Medieval history
 1. Early medieval history
 2. Later medieval history

- D. Modern European History
 1. Renaissance and Reformation
 2. Seventeenth and eighteenth centuries
 3. Nineteenth and twentieth centuries

- E. History of Asia
 1. Ancient Asia
 2. Modern Asia

- F. Latin American history
 1. Colonial period
 2. National period

- G. Religious history (secondary field only)
 1. Christian church history
 2. Old Testament and ancient Near East
 3. New Testament and the Graeco-Roman world
 4. Asian religions

Minors Permissible. Any approved minor.

Requirements. One year of study (at least 18 credit hours including a Ph.D. seminar) must be taken in residence. Competency is expected in the major field consisting of a general field selected from Group I above, plus an area of specialization from within the major field (see Group II). In addition, the student will select a second field (Group I) or a second area of specialization (Group II) other than the major field. These three fields—the major field, the area of specialization within the major field, and the secondary field in history—constitute the history fields. In addition to these, the student will present an approved minor outside history. The written comprehensive covers (1) the general field, (2) the area of specialization within the general field, (3) the secondary field in history, and (4) the minor field. The examinations will be prepared and read by faculty members assigned by the department chairman. On the oral examination the student will be tested on (1) the general field, (2) the area of specialization within the field, and (3) the secondary field in history. There will be no oral examination on the minor field unless the minor department requests it.

Progress Review. To evaluate the suitability of the continuation of his program, each Ph.D. student will take an oral examination after the completion of the first academic year of study. Ordinarily, the examination will be given between the completion of 12 to 18 hours of course work, but in every case the examination must be successfully completed before registration for the third semester of graduate work. The examination will be given by a committee of three faculty members selected by the department chairman.

Required Courses. At least one doctoral seminar.

Courses

500R. Special Studies in History. (1-3:1-3:0 ea.)

Study of special topics, directed by visiting or resident faculty. Check with department secretary for current topic and instructor.

570R. Sources and Problems in American History, 1492-1865. (1-2:6:0 ea.) Prerequisites: Hist. 370, 372, 375, 377, or consent of instructors. Fox, Allen, Hill

Core course in the literature of American history to 1865. All M.A. students majoring in American history are required to take sections totaling from 6 to 8 hours.

571R. Sources and Problems in United States History, 1865-Present. (1-2:6:0 ea.) Prerequisites: Hist. 377, 378, and 379, or consent of instructors. Alexander, Flammer, Fox, Marlow, Stewart

Core course in the literature of American history since 1865. All M.A. students majoring in American history are required to take sections totaling from 6 to 8 hours.

□Economics 574. European Economic History. (3:3:0)

□Economics 591. Seminar in Economic History. (2:2:0)

609. Greek and Roman Thought. (3:3:0) Prerequisites: Hist. 304 or 307.

A study of Greek and Roman intellectual, philosophical, and scientific achievements and their relation to Greek and Roman institutions.

613. Medieval Problems and Thought. (3:3:0) Prerequisites: Hist. 310 or 311. Pixton

Study of problems and interpretations in the history of the Middle Ages, from the fall of Rome to the Renaissance.

618. Renaissance Problems and Thought. (3:3:0) Prerequisite: Hist. 312 or consent of instructor. Jensen

Source readings, analysis, and interpretation of selected historical problems for the Renaissance.

619. Reformation Problems and Thought. (3:3:0) Prerequisite: Hist. 313.

Source readings and discussions of the great men and ideas of the sixteenth century.

621. Problems in Modern Europe. (3:3:0) Prerequisite: Same college-level study of modern Europe. Cardon

Readings, analysis, and interpretation of selected historical problems of the nineteenth and twentieth centuries.

625. Problems in European Diplomacy since 1815. (3:3:0)

Prerequisite: Hist. 425 or consent of instructor. Cardon
Readings on significant problems and issues in modern diplomatic history, accompanied by group analysis and interpretation.

628. European Thought and Culture of the Enlightenment. (3:3:0) Prerequisite: Hist. 320. Jensen

Intellectual and cultural movements of the seventeenth and eighteenth centuries, with emphasis on the rise of scientific thought and rationalism.

629. European Thought and Culture since 1800. (3:3:0) Prerequisite: Hist. 429. Tobler

A study of the most influential intellectual ideas of the nineteenth and twentieth centuries—their forms of expression, and their impact on the contemporary world.

631. Problems in Russian History. (3:3:0) Prerequisites: Hist. 330 and 331 or consent of instructor. Holmes

Detailed examination of the Russian revolutionary movement and the development of communism.

635. Problems in Tudor and Stuart History. (3:3:0) Prerequisite: Hist. 436. Thorp

Examination of major sources and historical problems of sixteenth- and seventeenth-century England.

640R. Problems of Asian History. (3:3:0 ea.) Prerequisite: same previous study of Asia. Hyer

Analysis and interpretation of selected problems and themes of Asian history, based on broadly selected readings.

648R. Asian Thought and Culture. (3:3:0 ea.) Prerequisites: Hist. 340 and 341.

Reading and analysis of important institutions and aspects of Asian development.

650. Latin America. (3:3:0) Prerequisites: Hist. 351 and 352. Addy

An advanced study of the generalized historical development of Latin America—colonial and national periods considered.

659R. (Hist.-Relig.) Seminar in History of Asian Religion. (1-6:1-2:0 ea.)

660. Problems in Western History. (3:3:0) Prerequisites: Hist. 462 and 463. Alexander, Allen, Warner

An analysis of the major interpretations and themes in the history of the American West.

665. Problems in Mormon History. (3:3:0) Prerequisites: Relig. 341 and 342, or consent of instructor.

In-depth study of Mormon historiography, sources, and historical literature, and experience in working from primary sources in Church archives and other depositories.

666. Problems in Utah History. (2:2:0) Prerequisite: Hist. 466. Campbell, Wood

Reading in depth in the documents and discussion of interpretations of important events in Utah history.

681. Sources and Problems in American Intellectual History. (3:3:0) Prerequisites: Hist. 471, 472. Hill, Marlow

Intensive reading of source materials in intellectual and social history.

682. Problems in American Church History. (3:3:0)

Considers controversial issues in church history: nature of Puritanism, impact of religion on American culture, influence of religion on reform, the nature of social gospel, and neoorthodoxy.

690R. Graduate Seminar in History. (1-3:1-3:0 ea.)

Advanced research and analysis of important historical problems and movements.

698. Special Readings in History. (1-2:0:Arr.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

798. Special Readings in History. (1-2:0:Arr.)

799R. Dissertation for Doctor's Degree. (Arr.)

Home Economics Education

Professor. Brasher (chairman, 2234-B SFLC).

Program. Master of Science (M.S.)

Application Consideration Dates. Same as Graduate School deadline.

Entry Times. Any regular registration.

Master of Science

Prerequisites. Undergraduate emphasis in home economics education, EdPsy.-InSci. 600 or CDFR 596R, and Stat. 552.

Field. Home economics education.

Minors Permissible. Option I—any established minor in the College of Family Living, or other colleges as approved by graduate committee, Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.).

Required Courses. Home Ec. Ed. 530, 532, 630, 650, and 689.

Courses

521R. Workshop in Home Economics Education. (1-2: Arr.:Arr. ea.) Prerequisite: consent of instructor.

530. Home Economics Education for Adults. (2:2:0) Prerequisites: Home Ec. Ed. 489; consent of instructor.

The principles, practices, programs, materials, and resources for teaching home economics education to adults.

532. Program Evaluation in Home Economics Education. (2:2:0) Prerequisite: Home Ec. Ed. 479 or consent of instructor.

Analysis of evaluation techniques and construction of evaluation devices unique to home economics.

630. Methods and Curriculum in Home Economics Education. (3:3:0)

Intensive study of methods of teaching and curriculum development for home economics education programs.

650. Organization and Administration of Home Economics Education Programs. (3:3:Arr.)

689. Theoretical Foundation of Home Economics Education. (3:3:Arr.)

Examination of social and educational forces which affect individuals and families.

693R. Independent Readings and Conference. (1-3:Arr.: Arr. ea.)**699R. Thesis for Master's Degree.** (6-9:Arr.:Arr. ea.)

Humanities and Comparative Literature

Professor. R. Britsch.

Associate Professors. T. Britsch (chairman, 113 JKBA), L. Peer.

Assistant Professors. A. Bassett, J. Green, D. Marshall, L. Shumway, S. Sondrup, G. Tate.

Program. Master of Arts (M.A.).

Entrance Examination Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Undergraduate major in the field of graduate emphasis or an undergraduate major or strong minor in each selected emphasis area.

Requirements. Minimum of 25 semester hours plus thesis (6-hr. min.—699R).

Fields. Comparative literature, humanities.

Humanities Emphasis.

1. Hum. 601 and 602.
2. A primary emphasis area (12 hours or more) selected from music history, art history, literature in English, literature in a foreign language, philosophy, or history, and a secondary emphasis area (6 hours or more). One of the emphasis areas must be nonliterary.
3. A bibliography and research course.
4. Language prerequisite: 6 semester hours of literature in a foreign language.

Comparative Literature Emphasis

Language. A thorough reading knowledge of three languages, one of which must be German or French, and one of which may be English if the student chooses to emphasize English or American literature. Competence may be demonstrated either by examination or appropriate course work. Students planning advanced work in comparative literature should acquire a reading knowledge of another modern language and a classical language.

Course work. Hum. 610, two sections of Hum. 620R (in different periods), two sections of Hum. 630R (in different genres), and 9 additional hours of relevant literature courses.

Examination. During the last semester of residency, the student will take a written and oral examination covering his areas of concentration and general literary theory. In addition to material specifically represented by course work, the student will be expected to have a sound knowledge of the primary and secondary texts on the Master's Reading List (available from the department office). The defense of the thesis will normally be in conjunction with the general oral examination.

The student should contact the department chairman for details during his first semester of residency.

Minor.

Although there is no minor in comparative literature at the M.A. level, students are invited to use comparative literature courses to support their work in other areas.

Ph.D. Minor in Comparative Literature

A thorough knowledge of three literary traditions, one of which must be French or German, in two periods each. All readings must be done in the original language. Competence will be demonstrated in a written and an oral examination covering the student's areas of concentration. The student may be asked to demonstrate his facility with the languages relevant to his program during either or both of the examinations.

Humanities Courses

595R. Directed Readings.

 (1-3:Arr.:0 ea.)

For undergraduate and graduate majors only, with permission of department chairman.

601. The Arts in Historical Context: Greece to the High Renaissance.

 (3:3:0)

A historical study of the major arts of the Western world, from Classical Greece to the High Renaissance.

602. The Arts in Historical Context: Late Renaissance through the Modern Age.

 (3:3:0)

A historical study of the major arts of the Western world, from the later Renaissance through the Modern Age.

699R. Thesis for Master's Degree.

 (Arr.)

Comparative Literature Courses

595R. Directed Readings.

 (1-3:Arr.:0 ea.)

For undergraduate and graduate majors only, with permission of department chairman.

610. Methods of Study in Comparative Literature.

 (3:3:0) Prerequisite: consent of instructor.

Approaches to the study of relationships among literatures and to analysis of types, genres, styles, etc.; definition of movements and periods.

620R. Studies in Periods and Movements.

 (3:3:0 ea.)

Prerequisite: prior or concurrent enrollment in CompLit. 610 or consent of instructor.

Topic varies.

630R. Studies in Literary Genres.

 (3:3:0 ea.) Prerequisite: Prior or concurrent enrollment in CompLit. 610 or consent of instructor.

Topic varies.

690R. Seminar in Comparative Literature.

 (3:3:0 ea.)

Prerequisite: prior or concurrent enrollment in CompLit. 610 or consent of instructor.

Selected problems in comparative literature. Course content varies from semester to semester.

699R. Thesis for Master's Degree.

 (3-9:Arr.:Arr. ea.)

Industrial Education

Professors. Hinckley, McArthur, McKell (chairman, 230 SNLB).

Associate Professors. Allen, Brown, Holt, Grover, Mortensen, Nish, Simmons.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Programs. Master of Science (MS), Master of Industrial Education (MIE).

Master of Industrial Education

Prerequisites. A valid industrial education teaching certificate and a minimum of one year's teaching experience in industrial education.

Field. Industrial education.

Minors Permissible. (9-10 semester hours) Art, instructional media, educational psychology, special education, guidance and counseling, junior college curriculum, educational supervision and administration, community school, others with departmental approval; Option II.

Requirements. Minimum of 33 semester hours including a field project.

Required Courses. Ind. Ed. 615, 625, 645, 690, 698, Ed. 560; and a minimum of 6 semester hours selected from graduate industrial and technical education courses.

Master of Science

Prerequisites. 30 semester hours in acceptable industrial and technical undergraduate courses; or a minimum of six years of bona fide trade experience.

Fields. Industrial arts education, technical education, technology.

Minors Permissible. (9-10 semester hours) Educational psychology, guidance and counseling, instructional media, special education, supervision and administration, community school, junior college curriculum, business management, others with departmental approval; Option II.

Requirements. Minimum of 27 semester hours plus thesis (6-hr. min.).

Required Courses. Ed. 600 or 660, Stat. 552 or 501, Ind. Ed. 615, 690R, 694R (2-hr. min.), 699R, and a minimum of 6 semester hours selected from graduate industrial and technical education courses.

Courses

505. Industrial Arts for Elementary Teachers. (2:2:0)

Nature and needs of teachers instructing industrial arts in the elementary schools, with emphasis on content and procedures.

535. Industrial Education Safety and Liability. (2:2:0)

Principles of accident causes and prevention in industrial education laboratories. Teacher and student responsibility regarding liability; present laws affecting school safety.

540. Industrial Occupational Information and Guidance. (2:2:0)

Instruction in current industrial and technological advances related to industrial education.

593R. Workshop in Industrial Education. (1-3:Arr.:Arr. ea.)

Instruction in current industrial and technological advances related to industrial education.

610. History and Trends in Industrial and Technical Education. (2:2:0)

Historical developments of industrial and technical education programs for their early beginnings to the present.

615. Principles and Objectives of Industrial and Technical Education. (2:2:0)

General philosophy, principles, and objectives of industrial arts, vocational education, and technical education programs.

625. Course Construction in Industrial and Technical Education. (2:2:0)

Preparation and use of a course of study in industrial and technical fields based on an analysis of the occupation.

630. Problems of Adult Industrial Education. (2:2:0)

Development of the adult industrial education movement and the problems relative to teaching adults, with emphasis on continuing education.

635. Planning and Equipping Industrial and Technical Programs. (2:2:0)

A study of industrial and technical school laboratories designed to facilitate supervised instruction in industrial arts, vocational education, and technical education.

640. Coordination and Supervision of Industrial and Technical Education. (2:2:0)

Methods of supervision and coordination of industrial arts, vocational education, and technical education programs, including laws, regulations, and policies affecting these programs.

645. Visual and Graphic Materials in Industrial Education. (2:1:2)

Basis for the selection, development, and use of visual and graphic materials and their contribution to facilitating instruction in industrial and technical education.

690R. Seminar. (1:1:0 ea.)

Review of latest developments and research findings in the field of industrial and technical education.

694R. Reading and Conference. (1-3:1-3:0 ea.)

Limited to a maximum of 6 credit hours.

695R. Problems in Industrial and Technical Education. (1-3:1-3:3-9 ea.)

Limited to a maximum of 6 credit hours.

698. Field Project. (2-4:Arr.:Arr.)

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

Institute of Government Service

Consult the bulletin of the Graduate School of Management.

Interdepartmental Programs

The Graduate School is authorized to allow a limited number of superior students to pursue special graduate programs which do not fall into traditional departmental degree programs. If the expertise and classwork already exist on the campus, students may propose such special programs to the Graduate Council. For further information, please contact the Office of the Graduate Dean (B-336 ASB).

Languages

Classical, Biblical, and Middle Eastern Languages

Professor. Clark.

Associate Professor. Phillips (chairman, 240 B-34).

Assistant Professor. Mackay.

Program. Master of Arts (M.A.).

Entrance Examination Required. Graduate Record Examination (general aptitude).

Entry Times. Fall Semester recommended.

Master of Arts

Prerequisites. Undergraduate major in Latin or Greek

or their equivalent and reading knowledge of French or German.

Fields. Classics (with an area of emphasis in Greek, Latin, or the teaching of Latin).

Minors Permissible. Any established minor in the humanities or the sciences; Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. None.

Greek

561. Attic Orators. (3:3:0) Prerequisite: consent of instructor. Mackay, Phillips

612. Readings in Greek: Paul's Letters. (3:3:0) Prerequisite: one year of Greek or consent of instructor. Mackay, Phillips.

613. Readings in Greek: General Epistles and the Apocalypse. (3:3:0) Prerequisite: one year of Greek or consent of instructor. Mackay, Phillips

665. The Greek Historians. (3:3:0) Prerequisite: consent of instructor. Mackay, Phillips

671. Homer. (3:3:0) Prerequisite: consent of instructor. Mackay, Phillips

679. The Greek Dramatists. (3:3:0) Prerequisite: consent of instructor. Mackay, Phillips

694R. Seminar in Literature. (3:3:0 ea.) Prerequisite: consent of instructor. Mackay, Phillips

699R. (Greek-Latin) Thesis for Master's Degree in Classics. (Arr.) Mackay, Phillips

Hebrew

681. Studies in the Hebrew Old Testament. (3:3:0) Prerequisite: two years of Hebrew or consent of instructor. Pack

682. Studies in Hebrew. (3:3:0) Prerequisite: Hebrew 681. Pack

Latin

561. Medieval Latin. (3:3:0) Prerequisite: Latin 301 or 112 or equivalent. Mackay

621. Romance Philology. (3:3:0) Clark

661. Cicero. (3:3:0) Clark, Mackay

665. The Latin Historians. (3:3:0) Mackay, Phillips

671. Virgil. (3:3:0) Clark, Phillips

675. The Latin Poets. (3:3:0) Clark, Phillips
Horace, Ovid, Lucretius, etc.

679. The Latin Dramatists. (3:3:0) Clark, Phillips
Plautus, Terence, etc.

681, 682. The Latin Fathers. (3:3:0 ea.) Prerequisite: consent of instructor. Mackay

690R. Directed Readings. (1-2:Arr.:0 ea.)
Clark, Mackay, Phillips
Individual study on a graduate level.

692R. Seminar in Philology. (2:2:0 ea.)
Clark, Mackay, Phillips

694R. Seminar in Literature. (2:2:0 ea.) Clark, Phillips

699R. (Latin-Greek) Thesis for Master's Degree in Classics. (Arr.)

French and Italian

Professors. Brown, Green, Lee (emeritus), Turner (chairman, 357 MCKB).

Associate Professors. H. Clark, Kimball, Lambert.

Assistant Professors. Ashford, Jensen.

Programs. Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. A bachelor's degree in French or equivalent, plus a reading knowledge of another foreign language.

Fields. French literature, French teaching emphasis.

Minors Permissible. Option II.

Requirements. Minimum of 28 semester hours plus thesis (6-hr. min.—699R)

Required Course. French 601.

Doctor of Philosophy

Prerequisites. A bachelor's degree or a master's degree in French.

Fields. French literature, French teaching emphasis.

Minors Permissible. Option II.

Requirements. A minimum of 62 semester hours plus a dissertation (18-hr. min.—799R). Languages required: a reading knowledge of German or Latin, and one other Romance language.

Required Courses. French 601.

French

511. Advanced Conversation for Students of Institute. (0:2:1)

520. Teaching French Grammar for Students of Institute. (2:2:0)

601. Bibliography and Research Techniques. (1:1:0)

□ **Latin 621. Romance Philology.** (3:3:0) R. Clark

622. History of French Language. (2:2:0) R. Clark

626. French Phonology. (2:2:2) Prerequisite: French 326 or consent of instructor. Recommended for teachers.

629. Stylistics. (2:2:0)
Intensive linguistic and literary analysis of French, especially from modern writers: syntax, translation, advanced stylistic analysis and advanced explication of texts.

645R. Studies in French Civilization. (3:3:0 ea.) Prerequisite: French 445 or consent of instructor.

660R. Studies in Medieval French Literature. (3:3:0 ea.) Ashford
Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

665R. Studies in Renaissance French Literature. (3:3:0 ea.) Ashford
Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

670R. Studies in Seventeenth-Century French Literature. (3:3:0 ea.) Brown, Green

Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

675R. Studies in Eighteenth-Century French Literature. (3:3:0 ea.) Lambert

Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

677. Principles of Foreign Language Learning and Teaching. (2:2:0) Prerequisite: French 377 or consent of instructor. Jensen

Study of basic theories and principles of language learning and teaching. Issues, trends, and current practices are examined. For experienced language teachers.

680R. Studies in Nineteenth-Century Romantic and Post-Romantic Movements. (3:3:0 ea.)

H. Clark, Green, Kimball
Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

685R. Studies in Twentieth-Century Pre- and Post-World War II Movements. (3:3:0 ea.) Turner

Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

690R. Directed Readings. (1-3:Arr.:0 ea.)

Individual study on a graduate level, to fit the needs of the graduate student. Not to be taken in lieu of classes.

692R. Seminar in Philology. (1-2:1-2:0 ea.) R. Clark

697R. Seminar in Teaching French. (2:2:0 ea.)

699R. Thesis for Master's Degree. (Arr.)

795R. Seminar in French Literature. (3:3:0 ea.)

Course content varies from semester to semester. The specific topic for a given term is listed in the class schedule.

799R. Dissertation for the Ph.D. Degree. (Arr.)

Germanic Languages

Professors. Davis (chairman, 326 MCKB), Kelling, Folsom, Rogers, Smith, Speidel, Watkins.

Associate Professors. Baker, Roos.

Assistant Professor. Keele.

Programs. Master of Arts (M.A.), Doctor of Philosophy (Ph.D.) in German, Master of Arts minor in Scandinavian Studies.

Entrance Examinations Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Fall Semester recommended.

Master of Arts

Prerequisites. Undergraduate major in German or its equivalent and knowledge of a second European language of 201 equivalent level.

Fields. German language, German literature, German teaching, German language or literature emphasis: Option I or II.

Minors Permissible. German teaching emphasis: Option II in German language and literature only.

Requirements. Minimum of 29 semester hours plus thesis (6-hr. min.—699); written comprehensive examinations.

Required Courses. German 615, 650, 677 first semester; plus German language or literature emphasis: 620, 628, 692R, or 699R; German teaching emphasis: 620 and four teaching seminars (697R).

Doctor of Philosophy

Prerequisites. Reading knowledge in two foreign languages (usually French, Russian, Latin).

Fields. German language, German literature, German teaching.

Minors Permissible. Any approved minor.

Requirements. Minimum of 62 semester hours plus a dissertation (18-hr. min.—799R).

Required Courses. German 615, 620, 628, 650, 677, two seminars in specialty area.

German

520. Advanced German Composition and Grammar. (2:2:0) Prerequisite: German 321 or consent of instructor. Exercises in vocabulary, grammar, and composition for high school and junior college teachers.

615. Applied German Linguistics. (3:3:0) Prerequisite: German 429, or consent of instructor. Folsom
The application of the finding of linguistics to the problems of teaching German grammar.

620. History of the German Language. (3:3:0) Folsom, Watkins

622. Gothic and Comparative Germanic Linguistics. (3:3:0) Folsom, Watkins

626. German Phonology. (3:3:0) Prerequisite: German 326 or consent of instructor. Folsom
A study of the sounds of German and its stress, rhythm, and intonation patterns, contrasted and compared with those of English.

628. Middle High German. (3:3:0) Folsom, Watkins, G. Tate

641. German Poetry. (3:3:0) Prerequisite: German 650 or consent of instructor.

642. German Drama. (3:3:0) Prerequisite: German 650 or consent of instructor.

643. The German Novel to 1945. (3:3:0) Prerequisite: German 650 or consent of instructor.

644. The German Novelle. (3:3:0) Prerequisite: German 650 or consent of instructor.

650. Understanding and Analyzing Literature (3:3:0) Keele

677. Principles of Foreign Language Learning and Teaching. (2:2:0) For experienced teachers only. Luckey, Jarvis, Jensen, Taylor

Appraisal of popular approaches in foreign language teaching; analysis of issues, trends, and innovations; and choice of area of interest for thesis project.

689. Contemporary German Literature. (3:3:0) Prerequisite: consent of instructor. Keele, Kelling, Smith

690R. Special Studies in German. (1-2:Arr.:Arr. ea.) By special permission only.

692R. Seminar in Philology. (3:3:0 ea.) Topics to be announced.

694R. Seminar in Literature. (3:3:0 ea.) Topics to be announced.

697R. Seminar in the Teaching of German. (2:2:0 ea.)

Latest developments and research in various aspects of language teaching.

699R. Thesis for Master's Degree. (Arr.)**799R. Dissertation for the Ph.D. Degree.** (Arr.)**Scandinavian****529. Old Norse.** (4:4:0) Prerequisite: knowledge of a modern Scandinavian language helpful but not required.

May be applied toward an undergraduate minor but especially suited to the graduate minor or to supplementation of programs in German or English philology.

G. Tate

594R. Seminar in Scandinavian Studies. (3:3:0)

Topics to be announced. Harris, Sondrup, G. Tate

Spanish and Portuguese

Professors. Anderson, Compton, de Jong (emeritus), Dowdle, Gibson (chairman, 303 MCKB), Moon, Rosen, Shreeve, Taylor.

Associate Professors. Clegg, Hall, Lyon, Quackenbush.

Assistant Professors. Ashworth, Dennis, Jackson, Jensen, Ramsey.

Programs

Spanish: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Portuguese: Master of Arts (M.A.).

Entrance Examinations Required. None for M.A. students.

Screening exam for doctoral degree students.

Application Consideration Dates. Same as Graduate School deadlines.**Entry Times.** Any regular registration.**Master of Arts**

Prerequisites. Undergraduate major in Spanish or Portuguese, or its equivalent.

Fields. Spanish language, Spanish literature, Spanish teaching, Portuguese language, Portuguese literature.

Minor Permissible. Option I or II.

Requirements. Minimum of 28 semester hours plus thesis (6-hr. min.—699R). The reading knowledge of a second foreign language is also required. For the teaching emphasis this must be an approved language, and reading proficiency must be on a third semester (201) level. Mastery of Spanish as demonstrated by a proficiency test. A minimum of one year of language teaching experience (or two years as a student instructor) is required for the teaching emphasis.

Doctor of Philosophy

Prerequisites. Undergraduate major in Spanish or Portuguese, or its equivalent.

Fields. Spanish language, Spanish literature, Spanish teaching.

Minors Permissible. Any approved minor.

Requirements. A minimum of 62 semester hours beyond the B.A. degree plus dissertation (18-hr. min.—799R). Language or literature emphasis: a reading knowledge of German, Latin, and one other Romance language. Teaching emphasis: mastery of Spanish as demonstrated by a proficiency test, mastery of two additional languages (as approved by advisory committee) at a third-

semester (201) level, and a minimum of three years of language teaching, including some secondary school experience.

Required Courses. As determined in consultation with the graduate advisory committee.

Portuguese**521. Romance Philology.** (3:3:0) Clark, Clegg**522. History of the Portuguese Language.** (2:2:0) Gibson, Jensen, Ramsey**552. Machado de Assis.** (2:2:0) Prerequisites: Portuguese 441, 451, or equivalent. Dennis**553. O Modernismo.** (2:2:0) Prerequisites: Portuguese 441, 451, or equivalent. Dennis, Jensen, Ramsey
The modern movement in Brazilian literature (1920-1945).**620R. Portuguese Composition.** (3:3:0 ea.) Dennis, Ramsey**642. Contemporary Portuguese Literature.** (3:3:0) Dennis, Jensen, Ramsey**650. Brazilian Literature.** (3:3:0) Dennis, Ramsey**651. Contemporary Brazilian Literature.** (3:3:0) Dennis, Ramsey**690R. Directed Readings** (1-2:0:Arr. ea.)**692. Seminar in Philology.** (2:2:0)**694R. Seminar in Literature.** (2:2:0 ea.)**699R. Thesis for Master's Degree.** (Arr.)**Spanish****520. Advanced Spanish Composition and Grammar.** (2:2:0)**521. Romance Philology.** (3:3:0) Clark, Clegg**522. History of the Spanish Language.** (2:2:0) Clegg, Dowdle, Gibson**523. Border Spanish.** (3:3:0) Prerequisite: Spanish 321 or consent of instructor. Clegg
An introduction to Mexican-American speech patterns and their impact upon the Spanish-speaking American subculture.**553. Spanish-Speaking American (Chicano) Literature.** (3:3:0) Prerequisite: Spanish 321 or consent of instructor. Lyon

A survey course of Spanish-English literature of the Mexican-American and other Spanish minorities within the United States.

556. Hispanic-American Poetry. (2:2:0) Compton, Lyon, Quackenbush**580R. Nineteenth-Century Spanish Literature.** (3:3:0 ea.) Prerequisite: Spanish 441 or consent of instructor. Ashworth, Dowdle, Gibson**584. Generation of '98.** (3:3:0) Ashworth, Moon**601. Bibliography and Research Techniques.** (2:2:0) Rosen, Taylor**615. Teaching Spanish Grammar.** (2:2:0) Prerequisites: Ling. 325 and Spanish 326 or consent of instructor. Anderson, Clegg

An analysis and organization of Spanish phonology, morphology, and syntax for effective teaching of Spanish grammar.

626. Spanish Phonology. (2:2:0) Prerequisite: Spanish 326 or consent of instructor. Anderson, Clegg

A study of the sounds of Spanish and its stress, rhythm, and intonation patterns contrasted and compared with those of English.

645. *Advanced Studies in Hispanic Culture.* (2:2:0)
Quackenbush
653. *Latin-American Drama.* (2:2:0) Quackenbush
- 654R. *The Spanish-American Novel.* (2:2:0 ea.)
Compton, Lyon, Quackenbush
656. *Modernista Prose and Poetry.* (2:2:0)
Compton, Lyon, Quackenbush
657. *Hispanic-American Essay.* (2:2:0) Lyon
658. *Hispanic-American Short Story.* (2:2:0)
Compton, Lyon, Quackenbush
660. *Spanish Medieval Literature.* (2:2:0) Dowdle, Gibson
- 670R. *Golden-Age Literature.* (3:3:0 ea.) Dowdle, Rosen
677. *Principles of Foreign Language Learning and Teaching.* (2:2:0) Jackson, Taylor
Study of basic theories and principles of language learning and teaching. Issues, trends, and current practices are examined. For experienced language teachers.
- 685R. *Twentieth-Century Literature.* (2:2:0 ea.)
Ashworth, Moon
- 690R. *Directed Readings.* (1-2:Arr:Arr. ea.) Prerequisite: consent of instructor.
Individual study on a graduate level, to fit the needs of the graduate student.
- 692R. *Seminar in Philology.* (2:2:0 ea.)
- 694R. *Seminar in Spanish Literature.* (2:2:0 ea.)
- 697R. *Seminar in Spanish Teaching.* (2:2:0 ea.)
Anderson, Jackson, Otto, Taylor
For experienced language teachers.
- 699R. *Thesis for Master's Degree.* (Arr.)
- 794R. *Seminar in Literature.* (2:2:0 ea.)
- 799R. *Dissertation for the Ph.D. Degree.* (Arr.)

Latin American Studies

Professors. Addy (history), Blair (linguistics), Compton (Spanish), Corbridge (agricultural economics), Gibson (Spanish and Portuguese), Layton (geography), Warner (history).

Associate Professors. Craig (sociology), DeHoyos (sociology), Dutton (economics), Fairbanks (communications), Lyon (Spanish), Madsen (TESL), Shreve (coordinator, 172 FOB), Spencer (sociology), Tullis (political science).

Assistant Professors. Chandler (history), Clegg (Spanish), Dennis (Portuguese), Fletcher (law enforcement), Quackenbush (Spanish), Santiago (continuing education), Skinner (youth leadership).

Instructors. Hawkins (anthropology and archaeology), Larson (food science and nutrition).

Program. Master of Arts (M.A.).

Entrance Examination Required. None.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Undergraduate preparation in the areas of Latin American studies. Oral and written proficiency in the Spanish or Portuguese language,* to be deter-

mined by individual examination or successful completion of Spanish or Portuguese 321.

Field. Latin American studies.

Minors Permissible. Any approved minor.

Requirements. For the Master of Arts Degree, the student will complete at least the following 34 hours of graduate work:

1. 15 semester hours (including at least one research seminar) in his preferred department of concentration.
2. 5 semester hours in a related department.
3. 5 semester hours in a second related department.
4. 3 semester hours in a Latin American Studies Seminar (690R).
5. 6 semester hours of thesis reflecting the student's multidisciplinary interests and acceptable to both his department of concentration and Latin American Studies.

A final oral examination is required. Of the 34 semester hours, 21 (including project, internship, or thesis) must be in Latin American content courses. Those courses are to be approved by the coordinator. Recommended areas for major and minor fields are: business, agricultural economics, food science and nutrition, law enforcement, public relations, geography, education (elementary, secondary, international), youth leadership, health, economics, international relations, linguistics, Teaching English as a Second Language, nursing, Spanish, sociology, political science, public administration, organizational behavior, etc.

Graduate Minor

Prerequisites. None.

Field. Latin American Studies.

Requirements. The same proficiency in Spanish or Portuguese as for the major; 11 hours in graduate-level courses in Latin American related subjects.

***Language Option.** When a student already has fluency in one of the required languages, he is encouraged to seek proficiency in the other or in a native language (Cakchiquel, Quechua, Guarani, etc.) of Latin America.

Study Abroad. The University currently offers excellent opportunities for study in Spain and Latin America. These programs are especially advantageous to the student of Latin American Studies and provide an opportunity for on-the-scene study in the Spanish language, history, geography, political science, sociology, and various other related fields. The courses offered in these programs help fulfill the requirements for the M.A. degree in Latin American Studies. All students are strongly encouraged to participate in one or more of these programs, especially those who have had no previous overseas experience.

List of Courses

Business Management

- 430 (3) Introduction to International Business (Latin American emphasis)
431 (3) International Marketing (Latin American emphasis)

Communications

- 580 (3) Comparative World Communication Systems (Latin America)

Geography

- 455 (3) Geography of Latin America
502R (2) Seminar in Regional Geography (semesters with Latin American content)
580 (2) Geography of Underdeveloped Areas

History

- 351 (3) History of Latin America
453 (3) Mexico

- 454 (3) Argentina, Brazil, Chile
 455 (3) Northern South America
 457 (3) The Indian in Latin American History
 460 (2) The Spanish Borderlands
 650 (2) Latin America

Languages**(Portuguese)**

- 552 (2) Machado de Assi
 553 (2) O Modernismo
 620R (3) Portuguese Composition
 651 (3) Contemporary Brazilian Literature

(Spanish)

- 455 (2) Ibero-American Culture
 520 (2) Advanced Spanish Composition and Grammar
 556 (2) Hispanic-American Poetry
 645 (2) Advanced Studies in Hispanic Cultures
 654R (2) The Spanish-American Novel
 656 (2) Modernista Prose and Poetry
 658 (2) Hispanic-American Short Story

Latin American Studies

- 690R (1-3) Interdisciplinary Seminar on Contemporary Latin American Problems

Political Science

- 501R (3) Advanced Topics (course designed to meet the needs of Latin American students)

Sociology

- 590R (1-3) Special Topics in Sociology (courses designed to meet the needs of Latin American students)

Courses

690R. Interdisciplinary Seminar on Contemporary Latin American Problems. (3:3:0 ea.) Prerequisite: consent of instructor.

698R. Latin American Studies 698R Project. (1-6:0:0 ea.) This course may be used to complete the master's degree work, thus allowing the students to choose between our regular thesis (699R) and this new project (698R).

699R. Thesis for Master's Degree. (1-6:Arr.:Arr. ea.)

Library and Information Sciences

Associate Professors. Johnson, Lamson, Marchant (acting director, 548 HBLL), Wright.

Assistant Professors. Purdy, Shields, Smith, Stirling.

Program. Master of Library Science (MLS).

Entrance Examination Required. Marginal applicants may be required to take the Graduate Record Examination.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration except at Spring Term.

Master of Library Science

Required Courses. LIS 500, 513, 523, 528, 530, 534, 536, 538, 696R, 697. Additional courses to total a minimum of 38 hours will be chosen in consultation with an adviser. LIS 500 should be taken the first semester.

Field. Library Science.

Requirements. 38 semester hours (a minimum of one calendar year). Some prerequisites may be required. An examination and a research project are required during the last semester.

Additional Requirements. There is a large range of skills useful to librarians, including such skills as foreign lan-

guages, instructional media, communications, computer programming, systems analysis, statistics, and English usage. Depending upon the student's objectives, up to 12 hours of skill courses may be required. No more than 6 hours of skill credit may be applied toward the degree.

In addition to course work, attendance at a number of informal lectures without credit is required of all students each semester. These colloquia are intended to broaden the student's outlook on librarianship and related fields through presentations by outstanding guest lecturers.

Undergraduate students may register for LIS 500, 513, 523, 557. All other classes are restricted to LIS graduate students and others by permission of the instructor.

New York bookman S. R. Shapiro and his wife Anita have established a gift of a \$100 U.S. Savings Bond to the outstanding graduate each year. This may be awarded as two \$50 bonds to two outstanding students.

Courses

500. Foundations of Library and Information Sciences. (2:2:0)

The basic principles and concepts underlying the cultural, intellectual, and historical foundations of library and information sciences.

☐ **Statistics 501. Statistics for Research Workers I.** (5:4:3)

☐ **Statistics 502. Statistics for Research Workers II.** (5:4:3)

513. Selection and Acquisition of Materials. (3:3:0)

Principles, criteria, and practice in evaluation, selection, and acquisition of book and nonbook materials. Required.

523. Reference Theory and Service. (3:3:0)

Intensive study of basic reference materials and services, including general bibliographic tools and form. Required.

☐ **Theatre and Cinematic Arts 527. Narration, Storytelling.** (2:2:0)

528. Organization and Processing of Materials. (4:4:0)

Theory and principle of the documentation of book and nonbook materials as expressed through classification and cataloging.

530. Philosophical and Professional Bases of Librarianship. (2:2:0)

The epistemological, historical, professional, and philosophical bases of library and information sciences.

534. Research in Library and Information Sciences. (2:2:0)

Bases, methods, and techniques of research. Experience in manipulating data. Statistical computer programs will be used and a research paper completed under individual advisement.

536. Library Organization and Administration. (3:3:0)

Organization and administration of libraries. Organizational and administrative theory discussed. Problems associated with personnel, authority, policy, planning, reports, standards, etc.

538. Documentation and Information Retrieval. (3:3:0)

Survey of nonconventional and experimental methods and devices for cataloging, indexing, and retrieving; data processing and the library.

539. Practicum in Librarianship. (1:1:0) Prerequisites: completion of or concurrent registration in LIS 501, 513, 523, and 528.

Thirty hours of practice work under the supervision of a professional librarian.

543. Literature of the Social Sciences. (2:2:0)

Analysis of subject concerns, methodology, and unique information needs of the various social science fields.

Examination of literature resources and problems of bibliographic control.

545. Literature of the Humanities. (2:2:0)

Analysis of subject concerns, methodology, and unique information needs of the various humanities fields. Examination of literature resources and problems of bibliographic control.

547. Literature of the Sciences. (2:2:0)

Analysis of subject concerns, methodology, and unique information needs of the various fields of science. Examination of literature resources and problems of bibliographic control.

☐ **Instructional Science 556. Selection and Utilization of Instructional Materials. (2:2:0)**

557. The Instructional Media Center in the School. (2:2:0)
Prerequisite: LIS 536.

The place of the IMC in educational programs. Standards, management, equipment, budget, and services.

567. Library Services for the Young Adult. (2:2:0)

Critical study of reading interests and library needs of young adults.

☐ **Psychology 570. Computer Use in Behavioral Sciences. (3:3:6)**

580R. Workshop: Current and Special Problems. (1-2:1-2 weeks: 40-50 hrs. per week ea.)

590. Current Problems in Technical Services. (2:2:0)
Consideration of major problems in acquisitions, cataloging, classification, and conservation of materials.

596. Advanced Information Science. (3:3:0)

Formal methods of intellectual access to documents. Automatic content analysis. Classificatory, query strategy, relevance, and similar concepts and techniques.

614. Literature of Mormonism. (2:2:0)

An intensive survey of the literature of Mormonism with emphasis upon the selection, organization, and utilization of this literature in libraries.

624. Government Publications. (2:2:0)

Intensive study of documents published by federal, state, and local governments and the U.N., with attention to their selection, organization, and use in different types of libraries.

628. History and Theory of Manuscript. (2:2:0)

Development of written communications and librarianship in the ancient world.

☐ **Elementary Education 628. Children's Literature. (2:2:0)**

632. History and Theory of Printing. (2:2:0)

Development of printed communications and librarianship in the modern world.

633. Advanced Library Administration. (3:3:0)

Application of such modern concepts as systems theory and participative management to library organizational behavior.

642. Seminar: Advanced Reference and Bibliography. (2:2:0)

Types of bibliography, advanced bibliographic techniques, administering reference services, analysis of research problems. The librarian-user interface.

645. Seminar: Classification Theory. (2:2:0)

Philosophical and theoretical bases of classification and cataloging.

656. Information Systems Analysis and Library Automation. (3:3:0)

Operations research techniques and data processing in all areas of librarianship.

☐ **Instructional Science 660. Management of Instructional Media Programs. (2:2:0)**

662. Trends in Library Services for Children. (2:2:0)

Prerequisite: Ed. 340.

Historical development of children's libraries, materials, and services. Publishers, illustrators, and authors are considered. Relationship to sociological, educational, and philosophical forces of various periods discussed.

665. Seminar: International and Comparative Librarianship. (2:2:0)

The comparative study of libraries and librarianship abroad and in the United States.

668. Seminar: Psycho-Sociological Base of Library and Information Sciences. (2:2:0)

Patterns of behavior in the librarian-user interface involving communication and information transfer.

☐ **Instructional Science 670. Advanced Design and Production of Instructional Materials. (2:2:1)**

694R. Independent Research. (1-2:Arr:0 ea.)

696R. Research Seminar. (2:2:0 ea.)

697. Project Seminar. (2:2:0)

Linguistics

Professors. Blair, Cox (chairman, 157 FB).

Associate Professors. Lytle, Madsen.

Assistant Professor. Baird.

Programs. Master of Arts (M.A.), Graduate Certificate in Teaching English as a Second Language.

Entry Times. Any regular registration.

Master of Arts in Linguistics

Prerequisites. (1) 5 credits in upper-division linguistics; (2) intermediate-level competence in two foreign languages (201 or equivalent) or high-level competence in one foreign language (321 or equivalent).

Fields. Applied linguistics, theoretical linguistics, TESL.

Minors Permissible. Any established minor in the humanities or the sciences; Option II.

Requirements. Minimum of 25 semester hours plus thesis (6-hr. min.—699R).

Required Courses. Ling. 528, 693R.

Courses

501. Advanced Junction Grammar. (3:3:0 ea.) Baird, Blair

Emphasis is placed on the identification and representation of special subtypes of adjunction, conjunction, and subjunction. Frames of reference. Order of specificity in grammatical description. Extensive analysis of English prose is conducted in class.

525. Generative Phonology. (3:3:0) Baird, Lytle

Techniques for analyzing phonological data and preparing phonological statements through ordered rules.

526. Junction Grammar Phonology. (3:3:0) Prerequisite: consent of instructor. Lytle

An examination of criteria for constructing a phonological analogue of the human speaker-hearer. Acoustic versus articulatory description. The representation of words and phrases as articulation trees. The interaction of syntacto-semantics and phonology.

527. Writing Transformational Grammars. (3:3:0) Baird, Blair

Introduction to transformational syntax. Techniques of syntactic analysis and preparation of grammatical statements.

528. Syntactic Theory. (3:3:0) Prerequisite: Ling. 527.

Intensive study of the theory of transformational grammar, including its history and recent extensions of the theory as seen in case grammar, generative semantics, etc.

529R. Linguistic Structures. (3:3:1 ea.) Lytle

A consideration and comparison of the phonological and morphological structures of several non-Indo-European languages. Students work with native informants.

531. Sociolinguistics. (3:3:0) Prerequisite: consent of instructor.

A survey of research and theory in anthropological linguistics and sociolinguistics.

590R. Readings in Linguistics. (1-3:Arr.:0 ea.)

Individual study of current linguistic literature. Occasional discussion sessions with instructor and other class members.

623R. Problems in Contrastive Linguistics. (3:3:0 ea.)

Contrast of structures in English and selected languages and the development of grammatical description from these contrasts.

626. Problems in Historical Linguistics. (3:3:0)

Offered 1976 and alternate years.

693R. Seminar in Linguistics. (2:2:1 ea.) Baird, Blair

Advanced research and analysis of various linguistic problems.

699R. Thesis for Master's Degree. (1-6:Arr.:0 ea.)

Master of Arts Degree and Graduate Certificate in Teaching English as a Second Language (TESL)

M.A. candidates may choose from among four areas of emphasis: teaching, materials development, supervision-administration, or composite.

Graduate Certificate. The certificate program (like the M.A. program with teaching emphasis) is designed to prepare teachers for both overseas and U.S. assignments. Type A certificates include teacher certification; Type B certificates do not.

Prerequisites. B.A. or B.S. degree and admission to Graduate School.

Application Consideration Dates. Same as Graduate School deadlines.

Requirements. 35 semester hours (including thesis where applicable) for M.A.; 28 semester hours (including field study) for certificate.

Required Courses (M.A.)

Core Courses: Engl. 529 or Ling. 528; TESL 527 (or Ling. 525), and TESL 528, 577, 578, 698 (TESL 201 required for most non-native speakers).

Teaching emphasis. Core courses; TESL 579, 581, 583, culture course, and electives.

Materials development emphasis. Core courses, minor, thesis, and electives.

Supervision-administration emphasis. Core courses; minor, TESL 584, 697; and electives.

Required Courses (Graduate Certificate)

TESL 527 (or Ling. 525), 528, 577, 578, 579, 583, 696; Ling. 325 (or Engl. 321 or 325), Ling. 528 (or Engl. 529); culture course.

Courses

527. Phonology of Modern English. (3:3:3) Prerequisites: English 321 or 325 or Ling. 325 or equivalent.

Cox, Luthy

Articulatory phonetics (phonemics), intonation, and contrastive analysis of English sounds with those of other languages.

528. Phonology of Modern English—TESL Laboratory. (2:0:3)

Practical experience in developing aural discrimination and accent correction skills. Extensive work with bilinguals.

577. Procedures in Teaching English as a Second Language. (3:3:3) Prerequisites: Engl. 321 or 529 or Ling. 423.

Methods and materials used in teaching English as a second language; observation, discussion, and some teaching.

578. TESL Materials Selection and Development. (3:3:0)

For TESL students. Evaluation and adaptation of texts, creation of tests, tapes, exercises, games, supplementary aids and texts.

579. TESL Student Teaching. (4-8:0-4-8) Prerequisites: TESL 577 and consent of instructor.

Teaching practice in a TESL setting. On-the-job training in planning instruction, preparing materials, and conducting actual classes.

581. TESL Testing. (2:2:0)

Instruction in preparing and evaluating language tests and in carrying out fundamental statistical processes.

583. TESL Literature. (3:3:0) Prerequisite: Engl. 251 or equivalent.

Methods of teaching literature to non-native English speakers, both TEFL and TESL.

584. TESL Supervision-Administration. (2:2:0) Prerequisite: Engl. 577.

Presentation of ministerial language policies, teacher selection and preparation, program development and direction.

585R. Problems in Teaching English as a Second Language. (3:3:0 ea.)

Instruction enabling prospective teachers to cope with TESL problems of linguistic and social convention.

696. TESL Field Study. (1-2:1-2:0) Prerequisite: completion of or concurrent registration in TESL 577 and 578, or consent of instructor.

Individual research projects for TESL Graduate Certificate candidates, culminating in a practical paper.

697. TESL Supervision-Administration Internship. (4:0: approximately 25 hours per week for one-half semester) Prerequisites: TESL 584 and the majority of coursework in TESL.

Actual field work in TESL settings, involving supervision, in-service training, curricula-program study and administration.

698. TESL Seminar. (2:2:0) Prerequisites: Completion of majority of TESL courses; consent of instructor.

An integrative seminar concerned with TESL theory and practice, research, and comparative methodology.

Mathematics

Professors. Burton, Crawley, Fearnley, Gee, Gill, Higgins, Hilleam (chairman, 290 TMCB), Jamison, Larsen, Moore, Peterson, Robinson, Snow, Wickes, Yearout.

Associate Professors. Armstrong, Campbell, Ferguson, Garner, Hansen, Skarda, Wight.

Assistant Professors. Chatterley, Lamoreaux, Tolman, Walter, Wynn.

Programs. Master of Science (M.S.), Master of Arts (M.A.).

Entrance Examinations Required. For foreign applicants, the Graduate Record Examination.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Science

Prerequisites. Credit at least equivalent to the Brigham Young University requirements for a B.S. degree in mathematics. Also, a year's sequence in abstract algebra and one in advanced calculus.

OPTION I

Minors Permissible. Any approved minor.

Requirements. Minimum of 18 semester hours of graduate mathematics, a minor (9 hrs.), plus thesis (6-hr. min.—699R).

Required Courses. Any 9 hours chosen from Math. 551, 631, 641, 671.

OPTION II

Requirements. Minimum of 24 semester hours of graduate mathematics courses plus thesis (6-hr. min.—699R).

Required Courses. Three of the four sets: Math. 551, 552; Math. 631, 641; Math. 634, 647; or Math. 671, 672.

This program is designed to prepare students for (1) additional study and research in mathematics at the Ph.D. level, (2) employment in industry or government.

Master of Arts

Prerequisites. Credit at least equivalent to the current Brigham Young University requirements for a B.A. degree in education with a teaching major in mathematics, a B.A. degree in mathematics, or a B.S. degree in mathematics.

Minors Permissible. Option I.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. Min.—699R), also state teacher certification. (Required certification courses may not be part of the graduate program.)

Required Courses. Math. 541, 542, 629. Any two-semester 600 sequence or Math. 551, 552.

This program is designed to prepare students for teaching mathematics in junior colleges or secondary schools.

Master of Arts in Mathematics Education

Prerequisites. In-service status as a secondary teacher of mathematics.

Minor Required. Education—12 hours.

Required. Education

- 536 (3) Secondary Curriculum Methods
- 636 (3) Secondary Curriculum and Methods: Design

Electives. Education

- 506 (3) Educational Media in the School
- 560 (3) Educational Tests and Measurements
- 601 (3) Comparative Current Educational Philosophy
- 606 (4) History of Education in Europe and America
- 608 (3) Social Foundations of Education
- 656 (3) Advanced Educational Psychology
- 696R (1-4) Independent Research
- 727 (2) Curriculum of the Public Schools

Requirements. Minimum of 36 semester hours (12 hours education, 25 hours mathematics). Math. 629 and any seven courses selected from the following: Math. 300, 301, 302, 315, 332, 371, 385, 387, 451, or any 500- or 600-level courses. At least 20 hours of the credit for

the master's degree must be in the 500 series or above. No thesis required.

Courses

300. History of Mathematics. (3:3:0) Prerequisite: Math. 112 or 301.

332. Introduction to Complex Analysis. (3:3:0) Prerequisite: Math. 214 or 244.

371, 372. Abstract Algebra. (3:3:0 ea.) Prerequisites: Math. 142, 214, or 111 and 301.

385. Linear Algebra. (3:3:0) Prerequisite: Math. 111 or 301.

387. Theory of Numbers. (3:3:0) Prerequisite: Math. 111 or 301.

411. Numerical Methods. (3:3:0) Prerequisites: Comput. Sci. 130; Math. 214 or 244. Recommended: Math. 322 or 372 or 385.

434. Introduction to Ordinary Differential Equations. (3:3:0) Prerequisite: Math. 214 or 244.

436. Introduction to Partial Differential Equations. (3:3:0) Prerequisite: Math. 321 or 434.

451. Modern Geometry 1. (3:3:0) Prerequisite: Math. 301 or 371.

452. Modern Geometry 2. (3:3:0) Prerequisite: Math. 451.

501. Real Numbers. (3:3:0) Prerequisite: Math. 371. Recommended: Math. 541.

Extensive examination of various axiomatic descriptions of the real numbers and the interrelationships among these descriptions. Offered on demand.

502. Set Theory. (3:3:0) Prerequisite: Math. 371. Zermelo-Fraenkel axioms for set theory; the axiom of choice; ordinal and cardinal numbers; algebra of sets. Offered on demand.

508. Mathematical Logic. (3:3:0) Prerequisite: Math. 371 or 541.

Propositional and first-order predicate calculi; set theories; well-ordering; transfinite induction.

512. Introduction to Numerical Analysis. (3:3:0) Prerequisite: Math. 411.

Theory of constructive methods in mathematical analysis.

513R. Advanced Topics in Applied Mathematics. (3:3:0 ea.) Prerequisite: consent of instructor. Offered on demand.

541, 542. Introduction to Real Analysis. (3:3:0 ea.) Prerequisite: Math. 244 or 315.

A rigorous treatment of continuity, differentiability, integration of functions of real variables, and infinite series.

551, 552. Introduction to Topology. (3:3:0 ea.) Prerequisite: completion of or concurrent registration in Math. 541.

Axiomatic treatment of linearly ordered spaces, metric spaces, arcs, and Jordan curves, types of connectedness.

585. Matrix Analysis. (3:3:0) Prerequisite: Math. 322, 372, or 385.

Characteristic values, canonical forms, and functions of matrices, with applications.

629. Teaching Mathematics in Secondary Schools. (3:3:0) Offered on demand.

631, 632. Complex Analysis. (3:3:0 ea.) Prerequisites: Math. 332 and 542.

Offered on demand.

634, 635. Theory of Ordinary Differential Equations. (3:3:0 ea.) Prerequisites: Math. 434 and 542.
Offered on demand.

641, 642. Functions of a Real Variable. (3:3:0 ea.) Prerequisite: Math. 542.

643R. Special Topics in Analysis. (3:3:0 ea.) Prerequisites: Math. 541, 542.
Topics selected from continued fractions, stochastic processes, generalized functions, etc.

645. Tensor Analysis. (3:3:0) Prerequisite: Math. 244 or 542.
Offered on demand.

647, 648. Theory of Partial Differential Equations. (3:3:0 ea.) Prerequisites: Math. 436 and 542.
Offered on demand.

651, 652. General Topology I, 2. (3:3:0 ea.) Prerequisite: consent of instructor.

653R. Special Topics in Geometry. (3:3:0 ea.) Prerequisites: Math. 372 and 452.
Topics from n -dimensional projective and algebraic geometry, foundations, transformations, curves and surfaces, forms and sheaf theory.

655R. Advanced Special Topics in Topology. (3:3:0 ea.) Prerequisite: consent of instructor.
Offered on demand.

661, 662. Functional Analysis. (3:3:0 ea.) Prerequisite: Math. 632 or 642.
Offered on demand.

671, 672. Modern Algebra. (3:3:0 ea.) Prerequisites: Math. 371 and 372.

675R. Special Topics in Algebra. (3:3:0 ea.) Prerequisite: Math. 671.
Group theory; commutative algebra; homological algebra; ring theory; algebraic number theory.

681. Linear Algebra. (3:3:0) Prerequisites: Math. 371, 372.
Offered on demand.

695R. Readings in Mathematics. (1-2:1-2:0 ea.)
Offered on demand.

699R. Thesis for Master's Degree. (6-9:Arr:Arr. ea.)

Microbiology

Professors. Beck, Bodily, Donaldson (chairman, 775 WIDB), Larsen, North, Sagers (graduate coordinator, 751 WIDB), Wright.
Associate Professors. Bradshaw, Burton, Jensen, Johnson.

Collaborator. Bolick.

Programs. Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examination Required. None.

Application Consideration Dates: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Science

Prerequisites. Adequate preparation for graduate work in the Department of Microbiology presupposes satisfactory training in the physical and biological sciences. If a student is deficient in foundation courses, opportunity will be given after entering Graduate School to correct these deficiencies; however, such a student will not be able to receive the advanced degrees in the minimum time required of more qualified candidates.

Fields. Genetics, medical technology, microbiology.

Minors Permissible. Any approved biological or physical science minor; Option II.

Requirements: Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. Micro. 331, 501, 511, 531, 551, 581, 691R, 699R; one year of inorganic college chemistry; one semester of quantitative analysis; Chem. 351, 352, 353, 481, 484; Physics 201 and 202; and Math. 111. Many of these courses would normally be taken during a student's undergraduate training.

Medical Technology Field. A nonthesis M.S. degree program is offered to certified medical technologists by the Department of Microbiology.

Doctor of Philosophy

Prerequisites. Master's degree in a biological or physical science.

Fields. Genetics, microbiology.

Minors Permissible. Any approved minor in biological or physical science.

Requirements. Minimum of 24 semester hours plus dissertation (18-hr. min.—799R). Prior to selection of a dissertation subject and assignment to a research adviser, the student must pass a written qualifying examination in the following areas: (1) general microbiology, (2) pathogenic microbiology, (3) immunology, (4) virology, (5) bacterial physiology, and (6) microbial genetics. This examination will normally be given after one year of graduate study. It may be waived if the student has received the master's degree in microbiology at Brigham Young University. The courses and number of credit hours required for the Ph.D. degree will be determined by the advisory committee based upon the level of previous academic preparation of the student and his specific interests.

A student must pass a comprehensive written and oral examination prior to admission to candidacy for the Ph.D. degree. This examination will be taken not earlier than two semesters after completion of the qualifying examination. Prior to taking the comprehensive examination the student must have satisfied the language-tool requirements and completed all formal courses required for the major and minor as well as courses in differential and integral calculus, Chemistry 461 and 462, and Micro. 641 and 661.

Required Courses. All classes required for a master's degree in microbiology, as listed above, plus differential and integral calculus, Chem. 461 and 462, Micro. 641 and 661.

Courses

501. Pathogenic Microbiology. (5:3:6) Prerequisite: Micro. 331 or consent of instructor.

Characteristics of pathogenic microorganisms—their isolation and identification.

511. Immunology. (4:2:6) Prerequisite: Micro. 501 or consent of instructor.

521. Industrial Microbiology. (2:2:0) Prerequisites: Micro. 331 and biochemistry.

522. Industrial Microbiology Laboratory. (1:0:3) Prerequisite: completion of or concurrent registration in Micro. 521.

531. Virology. (4:2:6) Prerequisite: Micro. 501 or 511.

551. Advanced Microbiology. (5:3:6) Prerequisites: Chem. 481 and 484 or consent of instructor.

581. History of Microbiology. (1:1:0)

601. Pathogenesis of Infectious Disease. (2:2:0) Prerequisites: Micro. 511 and consent of instructor.

611. Advanced Immunology. (2:2:0) Prerequisite: Micro. 511.

631. Advanced Virology. (2:2:0) Prerequisites: Micro. 531; Chem. 481 or equivalent.

632. Cell and Tissue Culture Techniques. (2:0:6) Prerequisites: Micro. 531; Chem. 481 or equivalent.

Advanced techniques utilized in cell and tissue culture procedures.

641. Radioactive Tracer Techniques in Biology. (3:1:6) Prerequisites: Physics 202 and consent of instructor.

651R. Special Topics in Microbiology. (1-2:Arr.:Arr. ea.).

661. Microbial Genetics. (4:3:3) Prerequisites: Micro. 331, a course in general genetics, Chem. 481 or equivalent.

Molecular bases of genetics of bacteria and bacteriophages, including mechanisms of DNA transfer, uptake, recombination, replication, and mutation.

671. Clinical Correlation. (2:1:3) Bolick
Correlation of laboratory data with the diagnosis, pathogenesis, course, and treatment of disease.

691R. Graduate Seminar. (1:1:0 ea.)

695R. Research. (Arr. ea.)

699R. Thesis for Master's Degree. (Arr. ea.).

799R. Dissertation for the Ph.D. Degree. (Arr. ea.).

Music

Professors. Bradshaw (composer-in-residence), Davis, Earl, Goodman (chairman, C-550-D HFAC), H. Laycock, R. Laycock, Mason, Nibley, Nordgren (graduate coordinator, E-554 HFAC), Williams, Woodward.

Associate Professors. Belnap, Dalton, Foxley, Gibbons, Kait, Keeler, Longhurst, Manookin, Pollei, Powley, Randall, Ripplinger, Stubbs.

Assistant Professors. Mathiesen, Robison, Unsworth.

Programs. Master of Music (M.M.), Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required.

1. Music Department Graduate Entrance Examination: presupposes the information and skills of two years of music theory. Given on the day preceding registration (excluding Sunday) for the Fall Semester and Summer Term and at other times by special arrangement with BYU Testing Center (B-268 ASB).
2. Graduate Entrance Performance Audition: for majors or minors in performance.
3. Doctoral Admissions Examination composed of the Advanced Music Test of GRE and an oral examination (required of doctoral students only).

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Music

Prerequisite (except for conducting specialty). A bachelor's degree in music performance or the equivalent.

Prerequisite for Conducting Specialty. A bachelor's degree in music education or evidence of sufficient training and experience in conducting and ability to play simple scores at the keyboard.

Field. Music Performance.

Minors Permissible. Option II only.

Requirements. Minimum of 32 semester hours, a scholarly paper, and a recital.

Required Courses (except for conducting specialty). Music 566R (4 hours beyond bachelor's degree program), 613, 633, 634, 635, 660R (each semester), 693, 697R, and 3 to 7 hours of electives.

Required Courses for Conducting Specialty. Music 613, 615 or 616, 620R and 621R (6 hours), 633, 634, 635, 648, 660R (4 hours), 694R, 697R, and 2 hours of ensemble.

The Master of Music degree is in preparation for performance and advanced private instruction.

Master of Arts

Prerequisite. A bachelor's degree in music in respective majors or the equivalent.

Fields. Music education, musicology, music theory.*

Minors Permissible. Option I or Option II.

Requirements. Minimum of 24 semester hours plus a six-hr. minimum of 698 or 699R.

Required Courses

Music Education: Music 605, 610, 612, 613, 633, 634, 635, 693, 699R.

Musicology: Music 613, 635, 693, 699R, and any 12 (Option II) or 15 (Option I) hours from the following classes: 636, 637, 638, 639, 640, and 675.

Music Theory: Music 591R, 613, 633, 634, 635, 675, 686, 693, and 698 or 699R.

*A student majoring in music theory who has had substantial experience in composition may, with the permission of the Music Department graduate faculty, submit a major composition to fulfill the thesis requirement for the Master of Arts degree.

The Master of Arts degree is in preparation for (1) further study and research at the doctoral level; (2) teaching and/or supervision at the elementary, secondary, and junior college levels; (3) composition; and (4) background in many related fields, such as community recreation, therapy, church music, merchandising, broadcasting, and music criticism.

Doctor of Philosophy

Prerequisite. A master's degree in music or the equivalent.

Fields. Music.

Minors Permissible. Any approved minor.

Requirements. Minimum of 68 semester hours plus dissertation (18-hr. min. 799R.).

Required Courses. Music 605, 612, 613, 635, 693, 699R (or 697R or 698), 785, 794R, 13 hours from the following: 633, 634, 636, 637, 638, 639, 640, 641R, 675, 754; and 3 hours from the following: 591R, 686.

The Doctor of Philosophy degree is in preparation for junior college, college, university, or conservatory teaching or administration; research or composition.

Courses

507R. Advanced Topics in Keyboard Harmony. (3:3:0 ea.) Prerequisite: Music 391. Keeler

Continuation of Music 391, emphasizing secondary triads and seventh chords, nonharmonic tones, secondary dominants and diminished sevenths, augmented triads and augmented sixths, chromatic modulation, and improvisation. Harmonizing of chorales and figured basses.

- 537. Music for Elementary School Teachers.** (2:2:0) Prerequisite: Music 345 or elementary teaching experience. Davis
Experience in teaching various music activities in the elementary school.
- 565R. Pedagogy.** (2:2:0 ea.) Prerequisite: advanced standing in performance.
Comprehensive study of performance pedagogy for major instrument or voice and supervised private teaching.
- 566R. Applied Music Literature.** (2:2:0 ea.) Prerequisite: senior standing as a performance music major.
Intensive study of literature for the major instrument. Taken by senior and graduate students in performance, with sections for voice, piano, organ, and orchestral instruments.
- 571R. Advanced Topics in Counterpoint.** (3:3:0 ea.) Prerequisite: Music 296. Bradshaw, Cundick, Manookin
- 581R. Advanced Topics in Orchestration.** (3:3:0 ea.) Prerequisite: Music 296. Bradshaw, Sardoni, Williams
- 586. Pedagogy of Music Theory.** (3:3:0) Prerequisite: Music 296. Nordgren
- 587R. Composition.** (3:3:0 ea.) Prerequisite: Music 296. Bradshaw, Manookin
- 591R. Advanced Topics in Analysis.** (3:3:0 ea.) Prerequisites: Music 472, 491. Bradshaw, Manookin
- 601. Music in the Elementary School.** (2:2:0) Prerequisites: Music 345 and the equivalent of an elementary education teaching minor in music. Davis
- 603. Music in the Junior High School.** (2:2:0) Prerequisite: Music 601. Gibbons, Ripplinger
- 605. Influence of Music on Behavior.** (3:3:0) Prerequisite: general psychology, sociology, or equivalent. Goodman, Mason
- 610. Supervision and Administration of Music in the Public Schools.** (2:2:0) Gibbons, Goodman
- 612. Music Education in Society.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Goodman, Mason
- 613. Basic Concepts in Music Education.** (2:2:0) Goodman, Mason
Required of all candidates for graduate music degrees.
- 615. Vocal Methods, Materials, and Resources.** (2:2:0) Prerequisite: Music 479 or equivalent. Woodward
- 616. Instrumental Methods, Materials, and Resources.** (2:2:0) Prerequisite: Music 479 or equivalent. Goodman
- 620R. Advanced Instrumental Conducting.** (2:2:3 ea.) Prerequisites: Music 296, 374, 375, 485, or equivalent. R. Laycock, Williams
- 621R. Advanced Choral Conducting.** (2:3:3 ea.) Prerequisites: Music 166, 296, 364, 374, 375, 485, or equivalent. Woodward
- 625R. Summer Music Clinic.** (1-2:4:4 ea.) (Two weeks during clinic.)
May be counted as either music education or applied music.
- 630R. Special Lectures in Music Education.** (1-3:Arr.:Arr. ea.) Prerequisite: certification in music plus teaching experience.
- 633, 634. History of Musical Style.** (2:2:0 ea.) Prerequisite: graduate standing. Powley, Smith
A study of the principal developments in styles and forms of Western music from the Middle Ages to today. Required of all candidates for graduate music degrees except those majoring in musicology.
- 635. Musical Research Techniques.** (3:3:0) Prerequisite: graduate standing or consent of instructor. Bradshaw, Mason, Mathiesen
Required of all candidates for graduate music degrees. Should be taken in first semester of graduate work.
- 636. Music in the Middle Ages.** (3:3:1) Prerequisites: Music 484, 485, or equivalent. Powley
- 637. Music in the Renaissance.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Powley
- 638. Music in the Baroque Era.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Smith
- 639. Music in the Classic Period.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Smith
- 640. Music in the Romantic Period.** (3:3:1) Prerequisites: Music 484, 485, or equivalent. Mathiesen
- 641R. Special Lectures in Musicology.** (1-3:Arr.:Arr. ea.) Prerequisites: Music 484, 485, or equivalent. Mathiesen, Powley
- 648R. Collegium Musicum** (2:3 Arr.:0 ea.) Prerequisite: consent of director.
Practical experience in designing programs, outlining music, and preparing program notes for music from the medieval to modern times.
- 652. History of Notation and Paleography.** (3:3:0) Prerequisites: Music 484, 485, 636, or equivalent. Powley
- 660R. Graduate Private Instruction.** (2:1:0 ea.) Prerequisite: completion of undergraduate performance proficiency requirements and audition.
Fifteen 45-minute lessons per semester. Three hours of practice required per day. Special fee. (For instructors see Music 159R.)
- 663. Solo Recital.** (2:1:0) Williams
One period per week with private teachers, 2-3 hours per day, plus public performance of the recital. Required of all graduate students minoring in performance. Special fee.
- 675. Music of the Contemporary Period.** (3:3:0) Prerequisites: Music 484, 485, or equivalent. Mathiesen
A survey of twentieth-century music, including its relationship to the past and its sociological, psychological, and philosophical implications for the present day.
- 687R. Composition.** (3:3:0 ea.) Prerequisite: Music 587R or equivalent. Bradshaw, Manookin
- 693. Proseminar in Music.** (2:2:0) Prerequisites: Music 484, 485, 635, or equivalent, and approval of advisory committee. Mason, Mathiesen, Nordgren
Required of all candidates for graduate music degrees. Should be taken in second semester of graduate work.
- 694R. Independent Readings.** (1-3:Arr.:Arr. ea.) Prerequisite: Music 693 or equivalent.
- 697R. Recital for Master of Music Degree.** (4:Arr.:Arr. ea.) Prerequisites: approval of advisory committee and graduate music faculty.
Required of all Master of Music degree candidates. Includes the preparation of public recital and a research paper on specific aspects of the recital. Special fee.
- 698. Composition for Master's Degree.** (2-6:Arr.:Arr.) Prerequisite: approval of the Music Department graduate faculty based upon evidence of ability in composition as manifested in a preliminary work. Bradshaw, Manookin
To be submitted by candidates for the master's degree majoring in theory with a composition emphasis.
- 699R. Thesis for Master's Degree.** (6-9:Arr.:Arr. ea.) Prerequisite: approval of the Music Department graduate faculty.
Candidates for the master's degree are required to show competence in writing and research before work is begun on the thesis.

753. Advanced Problems in Notation. (3:3:0) Prerequisite: Music 652. Powley

754. History of Musical Instruments. (3:3:0) Prerequisites: Music 484, 485, or equivalent. Offered alternate years. Williams

785. Historical Aspects of Music Theory. (3:3:0) Prerequisite: Music 296. Nordgren
Offered alternate years.

794R. Seminar in Music. (1-3:Arr.:Arr. ea.) Prerequisites: Music 635, 693, or equivalent, and approval of graduate advisory committee.

799R. Dissertation for Ph.D. Degree. (Arr.) Prerequisite: approval of graduate advisory faculty.

Nursing

Professors. Cope, Dyer, Van Drimmelen, Wood (chairman, 2240-A SFLC).
Associate Professors. Alley, Bethers, Harris, Leifson, Lyons, May, Murphy, Tillery.
Assistant Professors. Drake, Kennington, Rhees, Riddle, Willhite, Williams.

Program. Master of Nursing.

Entrance Examinations Required. Verbal and quantitative portions of the Graduate Record Examination.

Applications Consideration Date: Same as Graduate School deadlines.

Entry Times: Any regular registration.

Master of Nursing

Prerequisites. A baccalaureate degree in nursing from a NLN accredited program and current R.N. licensure in any state. The following undergraduate courses or equivalent: (Stat. 221, Zool. 361, Biochem. 281, and Nursing 306).

Fields. Clinical specialization in cardiovascular nursing, family nursing, neurological nursing, or oncological nursing.

Minors Permissible. Option II.

Requirements for Graduation. Minimum of 30 semester hours plus thesis (6-hr. minimum).

Required Courses. All specialties: Nursing 500, 504, 506, 508, 512, 517, 595R, 597, or 699R, plus courses in the specialty area.

Courses

500. Advanced Biophysical Assessment in Nursing. (2:1:2) Prerequisite: Nursing 306 and/or consent of instructor. Physical examination, problem identification, plan of nursing action, patient management, and evaluation.

504. Psychosocial Nursing. (2:1½:1) Prerequisite: consent of instructor. Techniques related to nursing assessment, management, and evaluation of patients with psychosocial problems.

506. Pathophysiology and Biochemical Disorders Related to Nursing Management. (3:3:0) Prerequisite: consent of instructor. Alterations in normal physiological chemistry during pathological or compensatory states.

508. The Pharmacological Basis of Nursing Management. (1-2:2:0) Prerequisite: consent of instructor. The chemical composition, physiological action, and therapeutic application of drugs.

512. Supervision and Teaching in Clinical Nursing Specialties. (1-6:1-6:0) Prerequisite: consent of instructor. Leadership and teaching methods with application to clinical nursing specialties.

517R. Nursing Research Concepts and Design. (2:2:0 ea.) Prerequisite: consent of instructor. Theory and application of research methodologies to nursing problems.

520. Concepts in Family Nursing: Family Health During Antepartum and Neonatal Periods. (4-6:2-3:2) Prerequisite: consent of instructor.

Family health promotion during antepartum, intrapartum, postpartum, and neonatal period.

521. Concepts in Family Nursing: Family Health, the Growing Family. (4-6:2-3:2) Prerequisite: consent of instructor.

Family health promotion when health needs are centered around a growing family.

522. Concepts in Family Nursing: Family Health, Chronic and Geriatric Problems. (4-6:2-3:2) Prerequisite: consent of instructor.

Meeting health needs of families with long-term disabilities and/or geriatric members.

523. Community-Based Nursing and Health Services. (2:2:0) Prerequisite: consent of instructor.

A study of health delivery in community settings.

530. Concepts in Cardiovascular Nursing: Clinical Cardiovascular Pathology of Adults. (2-3:2-3:2) Prerequisite: consent of instructor.

Clinical pathological findings of the cardiovascular and related systems with emphasis on adult patients.

531. Concepts in Cardiovascular Nursing: Clinical Cardiovascular Pathology of Children. (2-3:2-3:2) Prerequisite: consent of instructor.

Clinical pathological findings of the cardiovascular and related systems with emphasis on children.

532. Concepts in Cardiovascular Nursing: Management of Patients with Acute and Long-term Cardiovascular Problems. (2-3:2-3:2) Prerequisite: consent of instructor.

Nursing management of patients with acute and long-term cardiovascular problems.

540. Concepts in Neurological Nursing: Clinical Neurological Pathology of Adult Patients. (2-3:2-3:2) Prerequisite: consent of instructor.

Clinical pathological findings of the neurological system with emphasis on adult patients.

541. Concepts in Neurological Nursing: Clinical Pediatric Neurology. (2-3:2-3:2) Prerequisite: consent of instructor.

Clinical pathological findings of the neurological system with emphasis on manifestations in children.

542. Concepts in Neurological Nursing: Management of Patients with Acute and Long-term Neurological Problems. (2-3:2-3:2) Prerequisite: consent of instructor.

Nursing management of patients with acute and long-term neurological disorders.

550. Concepts in Oncological Nursing: Clinical Pathological Findings Associated with Tumor Growth and Development. (2-3:2-3:2) Prerequisite: consent of instructor.

Clinical pathological findings associated with tumor development and growth.

551. Concepts in Oncological Nursing: Cellular Physiological and Immunological Aspects Related to Tumor Growth and Development. (2-3:2-3:2) Prerequisite: consent of instructor.

Cellular physiological and immunological aspects related to tumor development and growth.

552. Concepts in Oncological Nursing: Nursing Management of Patients with Acute and Long-term Oncological

Disorders. (2-3:2-3:2) Prerequisite: consent of instructor.

Nursing management of acute and long-term oncological disorders.

595R. Seminars Related to Professional Development. (1-3:1:0 ea.) Prerequisite: consent of instructor.

597R. Independent Study. (Arr.) Prerequisite: consent of instructor.

599R. Cardiovascular Nursing Practicum: (Arr.:0:9-12 ea.) Cardiovascular nursing in a variety of settings designed to meet individual student objectives.

Organizational Behavior

Consult the Graduate School of Management section, page 21.

Philosophy

Professors. Madsen, Riddle, Yarn.

Associate Professors. Carter, Rasmussen, Warner.

Assistant Professors. Reynolds (chairman, 30 JSB), Packard, Paulsen.

Minor Only

Prerequisites. Lower-division courses prerequisite to those chosen for the minor.

Requirements. For master's level, 9 semester hours; for doctoral level, 15 semester hours.

Required Courses. Those specified by philosophy representative on the student's advisory committee.

Courses

305. Intermediate Logic. (3:3:0)

311. Philosophy of Language. (3:3:0)

312. Philosophy of Mind. (3:3:0)

315. Philosophy of Religion. (3:3:0)

352. Aesthetics. (3:3:0)

354. Philosophy of the Natural Sciences. (3:3:0)

355. Philosophy of the Behavioral and Social Sciences. (3:3:0)

371R. Topics in Philosophy. (2-5:2-5:0 ea.)

372R. Figures in Philosophy. (2-5:2-5:0 ea.)

373R. Historical Movements in Philosophy. (2-5:2-5:0 ea.)

448R. Readings in Philosophy. (1-4:1-4:0 ea.)

501R. Graduate Seminar. (2-5:2-5:0 ea.)

Intensive analysis of a selected topic, figure, or movement in philosophy, as announced each semester in the class schedule.

505. Logic and the Philosophy of Mathematics. (4:3:0) Prerequisite: Phil. 205 or consent of instructor.

Philosophical issues in logic, including: formal theories and definitions, limitations of the axiomatic method, and logic and set theory in the foundations of mathematics.

648R. Directed Readings in Philosophy. (1-4:1-4:0 ea.)

Physical Education

Professors. Allsen, Bangerter, Call, Hartvigsen, Holbrook, Jarman, C. Jensen, Roundy (chairman, 270 SFH), Shaw (graduate coordinator, 221-F RB).

Associate Professors. Barker, Fisher, Francis, Hirst, Jacobson, Johnson, Jones, McGown, Rasmus, Watts.

Assistant Professors. Bestor, Cryer, Durrant, Harrison.

Programs. Master of Arts (M.A.), Master of Science (M.S.), Doctor of Education (Ed.D.).

Entrance Examinations Required. For the doctoral program, the qualitative and quantitative sections of the Graduate Record Examination.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. A bachelor's degree with a major in physical education involving knowledge and competencies equivalent to those required in the undergraduate major program at Brigham Young University. Competency examinations in skill, fitness, and knowledge will be administered to entering graduate students. Students will be counseled to strengthen any areas of weakness identified in the examinations.

Fields. Dance, professional leadership.

Minors Permissible. Any approved minor.

Requirements

1. With no project, 36 semester hours.

2. With a project, 24 semester hours plus project (6 semester hours).

Required Courses

1. With no project, 13 hours as follows: P.E. 691, P.E. 692; one of the following: P.E. 662, 661, or 640; three of the following: P.E. 547, 642, 645, 647, or 648; one of the following: P.E. 601, 610, or 670.

2. With a project, P.E. 691, P.E. 692.

Master of Science

Prerequisites. A bachelor's degree with a major in physical education involving knowledge and competencies equivalent to those required in the undergraduate major program at Brigham Young University.

Fields. Analysis of human motions, professional leadership.

Minors Permissible. Any approved minor.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. P.E. 365, 691, 692.

Doctor of Education

Prerequisites. Two years of successful professional experience.

Fields. Analysis of human motions, professional leadership.

Minors Permissible. Any approved minor.

Requirements. Minimum of 70 semester hours plus a dissertation (12-hr. min.—799R).

Required Courses

1. All courses in one of the two following cores: Scientific core (18 semester hours): P.E. 547, 631, 642, 645, 646, 647, 648, 671, 691, 692; Administration core (18 semester hours): P.E. 601, 610, 640, 661, 662, 663, 670, 691, 692.

2. Supporting field (20 semester hours).

3. Electives chosen from graduate courses in physical education or related areas.

4. All candidates must demonstrate competency in statistics of at least the level demanded by P.E. 635.

Courses

547. Advanced Corrective Physical Education. (2:2:1)
Prerequisite: P.E. 446. Call

Techniques of postural evaluation, muscle testing, therapeutic exercises, and relaxation; extent and limitations of the physical educator's responsibility for recognition of divergent conditions and referral procedures.

549. Advanced Athletic Training (3:2:2) Prerequisite: P.E. 449 or equivalent. Durrant, Roberson

550R. Athletic Training Practicum. (1-6:Arr.:Arr. ea.) Prerequisite: P.E. 449 and 549 or equivalent. Durrant, Roberson

570. Teaching Progression in Individual Sports. (2:4:0) Jones

Materials, methods, and teaching progression in individual sports, including archery, badminton, bowling, tennis, and golf.

571. Teaching Progression in Team Sports. (2:2:2) Hirst, Jones

Materials, methods, and teaching progression in team sports.

575. Materials and Methods for Secondary Teachers. (2:1:2) Harrison, Jones

576R. Workshop in Fitness and Sport. (1-4:Arr.:Arr. ea.) Prerequisite: undergraduate major in physical education or equivalent. Jacobson, Roundy

Designed to give physical education teachers an experience in fitness and sport that will upgrade their skill, knowledge, and competence.

587R. Modern Dance Composition Advanced. (1:0:4 ea.)

Advanced principles of composition, including elements of space, motion, energy, and time.

588R. Modern Dance Performing Techniques. (2:0:6 ea.) Prerequisites: P.E. 382, 385.

Advanced techniques, with combinations of movement and pattern to further dance as a performing art.

589R. Workshop in Modern Dance. (1-2:Arr.:0 ea.)

601. Problems in Physical Education. (2:3:0) Bangertter
Identification and interpretation of the nine generalized problems in physical education.

610. Philosophy of Physical Education. (2:2:0) Holbrook
Interpretations, beliefs, and concepts underlying the profession of physical education.

631. Problems in Athletic Conditioning. (2:2:4) Allsen
Application of scientific principles to problems in athletic conditioning.

633. Physical Education for the Mentally Retarded. (2:2:0) Prerequisite: bachelor's degree in physical education. Call

Theory, concepts, and programs in physical education for trainable and educable mentally retarded.

635. Research Design in Physical Education. (2:2:1) Prerequisites: P.E. 464 or equivalent. Roundy

640. Curriculum Construction in Physical Education. (2:2:0) Johnson

Curriculum problems for elementary, secondary, and college physical education programs.

642. Mechanical Analysis of Activities. (2:2:0)

Bangertter, Johnson
Analysis of the mechanics of movement in various activities to develop the highest degree of skill.

645. Functional Anatomy and Kinesiology. (2:2:0) Prerequisites: Zool. 105, 260, 261; P.E. 341, 344, 446, 449, or equivalent. Call, Francis

Functional applied anatomy and kinesiology for physical education students.

646. Laboratory Methods and Procedures. (2:2:0) Prerequisites: P.E. 341 and 344 and concurrent enrollment in 674. Fisher

Basic techniques and procedures used in human performance laboratories.

647. Advanced Physiology of Activity. (2:2:0) Prerequisites: P.E. 341, 344. Fisher

Adjustments made by the body to physiological stress.

648. Theory of Motor Learning. (2:2:0) McGown
Theories and methods of learning physical skills.

661. Supervision in Physical Education. (2:2:0) Jarman
A consideration of the theory and practice upon which successful supervision in P.E. is based.

662. Administration and Public Relations. (3:3:0) Hartvigsen

Administrative and public relations problems at all school levels: local, state, and national.

663. Planning Facilities. (2:2:0) Jarman

Basic planning for facilities for school and community physical education and recreation programs.

670. History of Physical Education. (3:3:0) Holbrook
History of physical education from ancient civilization to the present day.

671. Psycho-Sociological Implications of Sport. (2:2:0)

Prerequisites: Psych. 111 and 450, or equivalent. Allsen
Analysis of the psycho-sociological implications of sport as it affects the participant and the spectator.

673. Physical Education in the Elementary School. (2:3:0)

Rasmus
Curricular interrelationships, and content materials in accomplishing educational results. For teachers, administrators, and supervisors.

674R. Workshop in Physical Education in the Elementary Schools. (1:combination of 40 hrs. ea.)

Materials, methods, and teaching progression in physical education for the elementary school. Offered on demand.

691. Graduate Admission Seminar. (1:2:0) Required of all graduate students during their first semester. Roundy

Evaluation of the student's aptitudes, leadership qualities, and ability to successfully complete an Ed.D. program in physical education.

692. Research Methods in Physical Education. (2:3:0) Roundy

694. Individual Study. (2:1:1) Holbrook
Readings from recently published professional literature.

698. Field Project, Master's Degree. (1-6:0:Arr.) Roundy

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.). Roundy

797R. Individual Research in Physical Education. (2-6: Arr.:Arr. ea.) Prerequisites: undergraduate major in physical education; matriculation for graduate study in the department. Roundy

799R. Dissertation for the Ed.D. Degree. (12:Arr.:Arr. ea.)

Physics and Astronomy

Professors. Ballif, Barnett (graduate coordinator, 187 ESC), Bass, Decker, Dibble, Dixon, Dudley, Eastmond, Fletcher (emeritus), A. Gardner, J. Gardner, Hales (emeritus), Hansen, Harrison (chairman, 296 ESC), A. Hill, M. Hill, Jones, Larson, McNamara, Merrill, Nelson, Vanfleet.

Associate Professors. Evenson, Jensen, Mason, Palmer, Rasband, Strong, Woodford.

Assistant Professors. Christensen, Hatch, Knight.

Programs. Master of Arts (M.A.), Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Prerequisites for the Ph.D. Degree. Satisfactory completion of the following courses or their equivalents: Physics 121, 122, 221, 222, 316, 317, 318, 321, 322, 341, 342, 431, 471, 551, 552, and Math. 214, 434.

Prerequisites for the M.S. Degree. Satisfactory completion of the following courses or their equivalents: Physics 121, 122, 221, 222, 316, 317, 318, 321, 322, 341, 342, and Math. 214, 434.

Prerequisites for the M.A. Degree. Satisfactory completion of the following courses or their equivalents: Physics 121, 122, 221, 222, 300, 316, 317, 321, 322 (or 341 and 386), and Math. 214, 434.

Any deficiencies in formal course work at the undergraduate level will be considered at registration time, and an appropriate program for removing these deficiencies will be developed by the student and his sponsor or adviser.

Special Examinations Required. Graduate Record Examination scores (both aptitude and advanced physics) are required of all applicants for admission.

Application Consideration Dates. Same as Graduate School deadlines. Applications should be submitted early (April 1, for fall registration) for prime consideration relative to scholarships or teaching assistantships.

Entry Times. Any regular registration.

Master of Arts

Field. Physics teaching.

Minors Permissible. Education or Option II.

Requirements. Minimum of 24 hours plus thesis (6-hr. min.—699R).

Required Courses. None. (This program differs from the M.S. program in its prerequisites.)

M.A.-3 Program. One mode of completing the M.A. degree is an M.A.-3 program for secondary and junior college teachers. This must begin in the junior year and leads to both B.A. and M.A. degrees in physics as well as teacher certification. Prerequisites to this three-year program are Math. 111, 112, and the general education requirements for other than physical sciences and mathematics. A typical M.A.-3 program follows:

Junior Year: Chem. 105; SecEd. 276; Math. 113, 214, 301, 302, 371, 434; Physics 214, 317.

Senior Year: EdAd. 410, EdPsy. 403R, SecEd. 415; Health 362; Physics 222, 300, 316, 318, 321, 511; Phys. Sci. 377, 479.

Graduate Year: Physics 341, 386, 551, 552, another two-semester physics series, 699R.

Suggesten Minors: Math, 387, 501, 502; or SecEd. 642, and EdAd. 640, 644R.

Master of Science

Fields. Acoustics, astrophysics, atomic physics and spectroscopy, biophysics, nuclear physics, planetary and space physics, plasma physics, solid-state physics, theoretical physics.

Minors Permissible. Recommended minor in mathematical physics, which may be satisfied with Physics 517, 518, and 621; also Option II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R).

Required Courses. None.

The Master of Science degree often is sought by those who intend to continue on for the Ph.D. degree, but it

also serves as a terminal degree for many who intend to work in industrial or governmental research or teaching. Those intending to enter research can maintain breadth or obtain some degree of specialization by selecting appropriate graduate or undergraduate courses where this can be done in conformity with the regulations of the Graduate School.

Doctor of Philosophy

Degrees. Two degrees are offered: physics and also physics and astronomy.

Prerequisites. To satisfy the language-tool requirement, the student may select any of the four options (I, II, III, or IV) as follows:

Options I and II: These options can be selected only upon the recommendation of the student's advisory committee; and only Russian, French, and German languages are applicable.

Option III: The student must demonstrate competency in reading Russian, French, or German and also—

- demonstrate competency in the use of computers as they relate to scientific computations comparable to the completion of a 3-hour computer science course and
- complete satisfactorily 3 semester hours of course work, approved by his advisory committee and selected from:
 - upper-division or graduate mathematics courses (except Differential Equations, Math. 434).
 - statistics or computer science courses with emphasis on the use of statistics and computers in the physical sciences.
 - Physics 617, 618 (Mathematical Physics).

Option IV: The student must—

- demonstrate competency in computer science as outlined in Option III.
- complete satisfactorily 9 semester hours of course work, approved by his advisory committee and selected from the list in part b of Option III.

Fields. Acoustics, astrophysics, atomic physics and spectroscopy, biophysics, nuclear physics, planetary and space physics, plasma physics, solid-state physics, theoretical physics.

Minors Permissible. See Required Courses below.

Requirements

1. Minimum of 48 hours in approved formal course work, exclusive of graduate seminars (see course 591R), plus dissertation (18-hr. min.—799R).

2. Successful completion of comprehensive written examinations covering the required courses listed below and an oral examination covering the two general fields selected under fields listed below (see under Required Courses). Normally these examinations will be taken toward the end of the second year.

3. Before admission to candidacy, tentative acceptance as a research student by a member of the faculty of the Department of Physics and Astronomy.

Required Courses. Physics degree: 517, 518, 621, 641, 642, 651, 652; physics and astronomy degree: 517, 518, 527, 528, 621, 651, 652. A graduate seminar each semester of residence. At least 12 credit hours in that field listed below which is most closely related to the field of the student's research to constitute a major and 12 credit hours in a second field to constitute a minor. No duplication between these courses and those listed above is permitted.

- Acoustics: Physics 561, 562, 565R, 566R, 623, 631, 681.
- Astrophysics: Physics 527, 528, 529, 611, 612, 627, 628, 671, 711R.

3. Atomic physics and spectroscopy: Physics 527, 528, 631, 632, 671, 672, 711R.

4. Nuclear physics: Physics 555, 581, 631, 655, 656, 751, 752, 711R.

5. Plasma physics: Physics 536, 537, 623, 631, 632, 645, 646, 711R.

6. Solid-state physics: Physics 581, 623, 631, 681, 682, 711R.

7. Theoretical physics: Physics 617, 618, 625, 626, 632, 711R, 751, 752.

8. Planetary and space physics: Physics 536, 537, 631, 645, 646, 671, 672, 711R.

9. Physics group for physics and astronomy degree only: Physics 536, 537, 625, 626, 645, 646, 655, 656, 711R (6 hrs.); 631, 632, 641, 642 (6 hrs.).

The student whose research is in acoustics or biophysics may, with the approval of his committee, construct a 12-hour major or minor which includes courses outside the department.

Courses

300. Philosophical Foundations of Modern Physics. (3:3:0) Prerequisite: Physics 221 or equivalent.

316. Atomic and Nuclear Physics Laboratory. (1:0:3) Prerequisite: completion of or concurrent registration in Physics 222.

317, 318. Elementary Methods in Theoretical Physics. (3:3:0 ea.)

321, 322. Mechanics. (4:4:0 ea.) Prerequisite: Physics 317.

341, 342. Electricity and Magnetism. (3:3:0 ea.) Prerequisite: Physics 317.

386. Advanced Experimental Techniques. (2:1:5)

387. Advanced Physics Laboratory. (2:1:3) Prerequisite: Physics 386 or equivalent.

391, 392. Seminar in Current Physics. (1:1:0 ea.) Prerequisite: consent of instructor.

431. Thermal Physics. (3:3:0)

441. Electronics for Physicists. (4:3:3)

471. Optics and Electromagnetic Theory. (3:3:0)

497R. Introduction to Research. (1-3:0:2-6 ea.)

511. Introduction to Theoretical Physics. (3:3:0) Prerequisite: Math. 434 or equivalent.

Basic principles of physics, with emphasis on their mathematical formulation. Topics treated vary from year to year.

513R. Special Topics in Contemporary Physics. (1-3:1-3:0 ea.) Prerequisite: consent of instructor.

Course content varies from year to year. Subject matter will generally be related to recent developments in physics.

517, 518. Mathematical Physics. (3:3:0 ea.) Prerequisite: Physics 318 or equivalent.

Topics in modern theoretical physics, including applications of matrix and tensor analysis and linear differential and integral operators.

527, 528. Introduction to Astrophysics. (3:3:0 ea.) Prerequisite: consent of instructor.

Fundamental principles and observational techniques of astrophysics.

529. Observational Astrophysics. (3:3:0) Prerequisites: Physics 527, 528.

Survey of important areas of current research in modern observational astrophysics.

536, 537. Space and Planetary Physics. (3:3:0 ea.) Prerequisite: consent of instructor.

Topics will include solar physics, interplanetary fields, atmospheres of earth and planets. Offered on sufficient demand.

551. Elements of Quantum Theory. (3:3:0) Prerequisites: Physics 221; Math. 434; or equivalent.

Analytical foundations of quantum mechanics; applications from atomic and molecular spectroscopy, quantum statistics, solid state physics, etc.

552. Elements of Nuclear Theory. (3:3:0) Prerequisite: Physics 551 or equivalent.

Foundations of nuclear physics considered in a quantum theory context; nuclear scattering, radioactivity, nuclear reactions, nuclear models, elementary particles, etc.

555. Nuclear Reactor Physics. (3:3:0) Prerequisite: Chem. Eng. 582 or consent of instructor.

Introduction to neutron physics in multiplying and non-multiplying media; diffusion and slowing down of neutrons; multigroup reactor theory.

557. Nuclear Reactor Physics Laboratory. (1:1:2) Prerequisite: Physics 555.

Laboratory experiments in neutron and nuclear reactor physics; reactor operation; cross-section, neutron age, and diffusion parameter measurements.

561. Fundamentals of Acoustics. (4:4:0)

General consideration of the generation, transmission, and reception of sound. Discussion of vibrating systems, properties of elastic media, mechanical and electrical energy, and radiation.

562. Acoustical Measurements. (2:0:4) Prerequisite: completion of or concurrent registration in Physics 561. Selected experiments in acoustics.

565R. Acoustics of Music and Speech. (3:3:0 ea.) Prerequisite: Physics 561 or consent of instructor.

Content alternates between topics in music and topics in speech. Sound production and perception; techniques for analysis and synthesis; computer modeling; machine recognition; ensemble effects. Offered on sufficient demand.

566R. Architectural Acoustics and Noise. (3:3:0 ea.) Prerequisite: Physics 561 or consent of instructor.

Content alternates between topics in architectural acoustics and topics in noise. Computer modeling of enclosures; techniques for measuring noise spectra; room design; noise control. Offered on sufficient demand.

581. Solid-State Physics. (3:3:0) Prerequisites: Physics 431 and 551.

Introduction to solid-state physics for students in physics, chemistry, geology, and engineering. Survey of phenomena occurring in solids, and important physical concepts by which these phenomena are understood.

591R. Seminar. (1-1½:1-1:0 ea.)

Required of all graduate students every semester in residence.

611, 612. Astrophysics. (3:3:0 ea.) Prerequisite: consent of instructor.

The theory of stellar atmospheres and interstellar matter. Offered on sufficient demand.

617. Advanced Topics in Theoretical Physics. (3:3:0)

Applications of tensor analysis, differential geometry, and differential forms to various topics in physics, such as mechanics, optics, relativity, and fluid dynamics.

618. Advanced Topics in Theoretical Physics. (3:3:0)

Symmetry principles in quantum physics, emphasizing group theory; applications to solid-state, nuclear physics, relativity, and quantum field theory.

621. Dynamics. (3:3:0) Prerequisite: Physics 322.

Advanced treatment of classical mechanics, including

Lagrange's and Hamilton's equations, rigid body motion, and canonical transformations.

623. Dynamics of Continuous Media. (3:3:0) Prerequisite: Physics 621.

The mechanics of systems with an infinite number of degrees of freedom. Topics include elasticity and hydrodynamics. Offered on sufficient demand.

625. Theory of Relativity. (3:3:0) Prerequisite: Physics 621.

Review of special relativity. General relativity, with applications to modern astrophysics. Offered on sufficient demand.

626. Relativistic Astrophysics. (3:3:0) Prerequisite: Physics 625.

Applications of general relativity to modern astrophysics, including gravitational collapse, black holes, cosmological models, gravitational waves, etc.

627, 628. Advanced Topics in Astrophysics. (3:3:0 ea.) Prerequisite: consent of instructor.

Internal structure of stars; galactic structure. Offered on sufficient demand.

631, 632. Statistical Mechanics. (3:3:0 ea.)

Advanced thermodynamics; classical statistical mechanics; quantum statistics; transport theory.

641, 642. Mathematical Theory of Electricity and Magnetism. (3:3:0 ea.) Prerequisite: Physics 342.

Advanced electrostatics and magnetostatics; Maxwell's equations and electromagnetic waves; relativistic electrodynamics; radiation theory; interaction of matter with electromagnetic fields.

645, 646. Plasma Physics. (3:3:0 ea.) Prerequisites: Physics 431, 621, 642.

A study of the plasma state of matter, including a description both in terms of individual particles and in terms of a fluid, with applications. Offered on sufficient demand.

651, 652. Quantum Mechanics. (3:3:0 ea.) Prerequisites: Physics 518, 551.

Nonrelativistic quantum mechanics logically developed, with applications.

655, 656. Nuclear Physics. (3:3:0 ea.) Prerequisite: Physics 552.

Fundamental properties of nuclei, nuclear forces, nuclear models, electromagnetic properties of nuclei, particle radioactivity, nuclear reactions, and interaction of radiation with matter. Offered on sufficient demand.

671. Atomic and Molecular Spectroscopy. (3:3:0) Prerequisite: consent of instructor.

Series and multiplet atomic spectra and rotational, vibrational, and electronic band spectra; determination of atomic and molecular structure.

672. Observation and Analysis of Spectra. (3:1:4) Prerequisite: Physics 671 or consent of instructor.

Analysis of optical spectra, with instrumentation and experimentation, including stellar spectroscopic techniques.

681, 682. Modern Theory of Solid State. (3:3:0 ea.) Prerequisites: Physics 581, 651.

Quantum mechanical theory of solids, emphasizing the unifying principles of symmetry, energy-band theory, dynamics of electrons and of periodic lattices and cooperative phenomena.

697R. Research. (Arr.)

699R. Research and Thesis for Master's Degree. (Arr.)

711R. Advanced Topics in Physics. (1-3:3:0 ea.) Prerequisite: consent of instructor.

Course content varies from year to year. Special topics in theoretical and experimental physics are treated.

751, 752. Advanced Quantum Theory. (3:3:0 ea.) Prerequisite: Physics 652 or consent of instructor.

Topics in relativistic quantum mechanics, including quantum field theory.

797R. Research. (Arr.)

799R. Research and Dissertation for Ph.D. Degree. (Arr.)

Political Science

Distinguished Professor. Grow.

Professors. Farnsworth, Hickman, Hillam (chairman, 270 MSRB), Jagchid, Mabey (graduate coordinator, 375 MSRB), Melville, Midgley, Riggs.

Associate Professors. Buckwalter, Morrell, Slover, Snow, Sorensen, Taylor, Timmins, Tullis.

Assistant Professors. Beal, Bohn, Williams.

Program. Master of Arts (M.A.).

Entrance Examinations Required. Graduate Record Examination (general and political science sections). All international students whose native language is not English are required to take the TOEFL.

Application Consideration Dates. Same as Graduate School.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Fifteen undergraduate semester hours in political science or equivalent as approved by committee.

Field. Political science.

Requirements. Twenty-four semester hours plus thesis (6-hr. minimum), a written comprehensive exam upon or near completion of course work and prior to writing thesis, and an oral defense of the thesis.

Required Courses. A graduate student's program will be determined in consultation with his committee prior to registration. Two seminars are recommended.

Courses

300. Political Inquiry. (3:2:1) Prerequisites: Pol. Sci. 110, 150; completion or concurrent registration in Pol. Sci. 170. Beal, Farnsworth, Taylor

301. The Logic of Political Inquiry. (3:3:0) Sorensen

302. Moral Foundations of Politics. (3:3:0) Bohn, Midgley, Sorensen

303. Empirical Political Theory. (3:3:0) Bohn, Buckwalter

304. Western Political Heritage—Ancient. (3:3:0) Midgley, Sorensen

305. Western Political Heritage—Modern. (3:3:0) Midgley, Sorensen

307. American Political Heritage. (3:3:0) Melville

309R. Topics in Political Philosophy. (3:3:0 ea.) Bohn, Melville, Midgley, Sorensen

310. The United States Political System. (3:3:0) Prerequisite: Pol. Sci. 110. Bohn, Grow, Melville

311. State and Local Government and Politics. (3:3:0) Prerequisite: Pol. Sci. 110. Farnsworth, Grow, Timmins, Williams

312. Urban Government. (3:3:0) Williams

313. Parties and Pressure Groups in the U.S. (3:3:0) Prerequisite: Pol. Sci. 110. Farnsworth, Grow, Melville

314. The United States Presidency. (3:3:0) Melville

315. American Legislative Systems. (3:3:0) Prerequisite: Pol. Sci. 110. Buckwalter, Grow

319R. Topics in American Government and Politics. (3:3:0 ea.) Buckwalter, Grow, Melville, Slover, Tullis, Williams

329R. Topics in Political Behavior. (3:3:0 ea.) Beal, Buckwalter, Farnsworth, Sorensen, Taylor, Tullis

330. Introduction to Public Administration. (3:3:0) Grow, Slover, Timmins

339R. Topics in Public Affairs. (3:3:0 ea.) Buckwalter, Slover, Williams

350R. Political Systems of the USSR and Eastern Europe. (3:3:0 ea.) Recommended: Pol. Sci. 150 or Hist. 330 or 331. Mabey, Morrell

351R. Parliamentary Government and Politics. (3:3:0 ea.) Grow, Mabey, Farnsworth, Morrell

352R. Third World Government and Politics. (3:3:0 ea.) Farnsworth, Tullis

359R. Topics in Comparative Government and Politics. (3:3:0 ea.) Farnsworth, Mabey, Morrell, Tullis

360. Constitutional Law—American Federal System. (3:3:0) Hickman, Williams

361. Constitutional Law — Rights and Immunities. (3:3:0) Hickman, Williams

363. Administrative Law of the U.S. (3:3:0)

364. Jurisprudence. (3:3:0) Midgley

368. Anglo-American Legal Institutions. (3:3:0)

370. Theory of International Relations. (3:3:0) Prerequisite: Pol. Sci. 170. Recommended: Pol. Sci. 300. Beal, Hillam

373. International Law. (3:3:0) Riggs, Taylor

375. International Organizations. (3:3:0) Prerequisite: Pol. Sci. 170. Recommended: Pol. Sci. 300. Beal, Riggs, Taylor

377R. Foreign Relations. (3:3:0 ea.) Buckwalter, Hickman, Morrell, Taylor

378R. International Systems. (3:3:0 ea.) Hillam, Morrell, Taylor, Tullis

379R. Topics in International Relations. (3:3:0 ea.) Beal, Hickman, Hillam, Slover, Taylor

500R. Field Study. (1-9:Arr.:Arr. ea.) Prerequisites: Pol. Sci. 110 or 310, 300.

Study and field experience through observation and participation in the process of government.

501R. Advanced Topics. (3:3:0 ea.)

Select advanced topics for graduate students only. Can be taken concurrently with 300- and 400-level courses.

505. Asian Political Thought. (3:3:0) Jagchid
Survey of Asian political thought both traditional and modern.

512. Public Policy. (3:3:0) Recommended: Pol. Sci. 310 and 312. Slover, Taylor

A treatment of contemporary public problem identification; the processes of policy formulation and legitimization; and evaluation of public policies.

☐ **Public Administration 600. Fundamentals of Public Administration.** (3:3:0)

☐ **Public Administration 602. Organizational Analysis.** (3:3:0)

☐ **Public Administration 603. Public Personnel Administration.** (3:3:0)

☐ **Public Administration 604. Public Finance Administration.** (3:3:0)

☐ **Public Administration 608. Contemporary Issues and Administration.** (3:3:0)

☐ **Public Administration 620. Municipal Administration.** (3:3:0)

☐ **Public Administration 621. City Planning.** (3:3:0)

☐ **Public Administration 630. International Project Administration.** (3:3:0)

☐ **Public Administration 631. Comparative Public Administration.** (3:3:0)

☐ **Public Administration 640R. Program Administration.** (3:3:0 ea.)

645R. Graduate Colloquium. (½:1:0 ea.)

Established for occasional papers and departmental needs.

690R. Seminar in Political Philosophy. (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Bohn, Melville, Midgley, Sorensen

691R. Seminar in Politics. (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Buckwalter, Grow, Melville, Slover

692R. Seminar in Empirical Theory. (3:3:0 ea.) Prerequisite: related advanced course(s). Beal, Bohn, Taylor

695R. Seminar in Comparative Government and Politics. (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Bohn, Farnsworth, Mabey, Morrell, Tullis

696R. Seminar in Public Law. (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Hickman, Williams

697R. Seminar in International Relations. (1-3:1-3:0 ea.) Prerequisite: related advanced course(s). Beal, Hickman, Hillam, Riggs, Taylor

698R. Directed Individual Study. (1-2:1-2:0 ea.) Prerequisite: permission of graduate committee and instructor.

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

Psychology

Professors. Allen, Bennion, Bergin, Cooper, Cundick, Daniels, Fleming (graduate coordinator, 1230-B SFLC), Hardy, Howell, Jensen, Payne, Pedersen (chairman, 1230-A SFLC), B. Robinson, Smith, Stimpson.

Associate Professors. Brown, Bunker, Higbee, P. Robinson, Thorne, Weight.

Assistant Professors. Jenkins, Lambert, Maughan, Miller, Sorensen, Wells.

Programs

School Psychology: Master of Science (M.S.).

General Psychology: Doctor of Philosophy (Ph.D.).

Clinical Psychology: Doctor of Philosophy (Ph.D.).

Instructional Psychology: Doctor of Philosophy (Ph.D.).

Entrance Examinations Required. Graduate Record Examination: aptitude and advanced psychology tests.

Application Consideration Dates. January 15 (and June 15 to fill the remaining available positions, if any).

Entry Times. Fall Semester (exceptional cases may be considered for Winter Semester and Spring and Summer terms):

Master of Science: School Psychology

(Interdisciplinary program jointly offered by the Departments of Psychology and Educational Psychology)

Prerequisites. Background work in psychology, including elementary psychological statistics. Those who have not had courses in child psychology, learning, personality, and exceptional children will be required to take such courses as part of their program.

Minors Permissible. Option II only.

Requirements. Minimum of 42 semester hours plus thesis (6-hr. min.—699R). Sixty semester hours are required for certification in many states and 60 semester hours are recommended.

Required Courses. Psych. 640, 641, 670, 680; Ed. 647, 665R, 667, 680R, 690R, 696R, 470 or CDFR 430. Students majoring in the Psychology Department are also required to take Psych. 670, 690, and 699. Students majoring in the Educational Psychology Department are also required to take Stat. 552, Ed. 660 and 699. Additional elective courses required as part of the program are to be selected with approval of the student's committee. Psych. 640, 680 should be taken first Fall Semester in residence. Psych. 641 should be taken first Winter Semester in residence. All required courses except Psych. 690, 699, or Ed. 660, 699 must be taken before Ed. 680R.

Note: Most states require the certification of practicing school psychologists. Early in the student's program he should consult the certification requirements for the state or states in which he may wish to work. These requirements vary widely. The above courses offer a solid core of training; however, most states have special requirements that should be taken into account when planning the graduate program. A file of many states' requirements is maintained at the Psychology Clinic, 257 EDLC.

Professional Preparation. Preparation for work in school districts as a school psychologist.

Doctor of Philosophy:

Experimental Psychology or Social Psychology

Prerequisites. Bachelor's degree, including courses in general psychology, elementary psychological statistics, experimental psychology, and three courses chosen from sensation and perception, motivation, personality, and principles of learning or their equivalent. Tool requirement I, II, III, or IV is acceptable. If tool requirement III is used, the tool subject will be computer science (Comput. Sci. 130 or 131 and Psych. 570) and any additional 3 hours from computer science, statistics, or Math. 112 or beyond. If tool requirement IV is used, the tool subject will be computer science (Math. 112; Comput. Sci. 131 or 231, 571; Psych. 570 and 572 or 573; and one class from Stat. 433, 531, 534, or 536).

Minors Permissible. Any approved minor or Option II.

Requirements. Minimum of 54 semester hours plus dissertation (18-hr. min.—799R). Completion of courses with a minimum grade of B— in each course and an overall GPA of 3.2 in all courses.

Required Courses. Psych. 520, 530, 550, 560, 562, 585, 670, 671, 690, and other courses as specified by the advisory committee.

Professional Preparation. University and college positions, organizational consultation, and research.

Doctor of Philosophy: Instructional Psychology

(Interdisciplinary program jointly offered by the Departments of Psychology and Instructional Science).

For information concerning this developing program, please communicate directly with the Department of Psychology or the Department of Instructional Science.

Doctor of Philosophy: Clinical Psychology

Prerequisites. Bachelor's degree, including courses in general psychology, elementary psychological statistics,

experimental psychology, personality, learning, abnormal psychology, and sensation and perception or motivation (equivalent course content is acceptable). Tool requirement I, III, or IV is acceptable. If tool requirement I is desired, petition must be filed stating the usefulness of this language in the specific clinical work that is anticipated. If tool requirement III is used, the tool subject will be computer science (Comput. Sci. 130 or 131, Psych. 570, and 3 additional hours from statistics, computer science, or Math. 112 or beyond). If tool requirement IV is used, the tool subject will be computer science (Math. 112; Comput. Sci. 131 or 231, 571; Psych. 570 and 572 or 573; and one class from Stat. 433, 531, 534, or 536).

Minors Permissible. Option II only.

Requirements. Minimum of 71 semester hours plus dissertation (18-hr. min.—799R). Completion of courses with a minimum grade of B— in each course and an overall GPA of 3.2 in all courses. Satisfactory completion of specialty examinations during the third year of program. One year's internship. (Comprehensive examinations must be completed prior to internship.) Completion of all requirements, including dissertation, for the doctoral degree must be accomplished within two calendar years after internship. It is recommended that in most instances the dissertation be completed before internship.

Required Courses. The following core courses: Psych. 520, 530, 560, 562, 585, 670, 671, and 690; plus 15 hours of committee-approved electives. Completion of the following courses in the sequence as listed:

Fall Semester, first year—Psych. 640, 645, 670, 784R, and one graduate core course as outlined above.

Winter Semester, first year—Psych. 641, 671, 680, 784R, and one graduate core course as outlined above.

Fall Semester, second year—Psych. 642, 681, 690, and one other graduate core course as outlined above.

Winter Semester, second year—Psych. 675, 682, and two graduate core courses as outlined above.

Fall Semester, third year—Psych. 690, 740R, elective courses for tool requirement II.

Winter Semester, third year—Psych. 740R; elective courses for tool requirement II.

Professional Preparation. College and university positions, mental health centers, hospitals, and mental health program evaluation.

Graduate Minor in Psychology. The student must have 12 semester hours of psychology courses as undergraduate preparation. In addition to these he must have 9 semester hours that will be counted as graduate credit.

Courses

510. History and Systems of Psychology. (3:3:0)

A survey of the origins and development of modern psychology, including consideration of the schools and theoretical systems.

511. Instructional and Communicative Techniques. (2:1:2)

Prerequisite: graduate standing in psychology.

Under faculty supervision, the student is given experience in planning, conducting, and carrying out the instruction of an undergraduate course.

520. Advanced Developmental Psychology. (3:3:0)

An overview of major research in genetic psychology, with emphasis placed on theory, content, and methodology.

526. Mental Retardation. (2:2:0) Prerequisite: Psych. 378 or equivalent.

530. (Sociol.—Psych.) Theory and Research in Social Psychology. (3:3:0) Prerequisite: Sociol.-Psych. 350.

A survey of current theory and research in social psychology, with emphasis on understanding the individual interaction.

550. Personality Theory. (3:3:0) Prerequisites: Psych. 111, 450, and 5 additional hours in psychology.

A critical review of the contemporary theories of personality that have been developed within the framework of major psychological systems.

555. (Sociol.-Psych.) Group Dynamics. (3:3:0) Prerequisite: Sociol.-Psych. 350.

Research and theories in group dynamics. May be used for credit either in psychology or sociology, but not in both.

560. Learning Theory. (3:3:0) Prerequisites: Psych. 111, 460, and 5 additional hours in psychology.

A critical review of current theories of learning and persistent problems.

561. Psycholinguistics. (3:3:0) Prerequisite: Psych. 111.

A survey of research and theory in verbal learning and verbal behavior, and the social implications of language usage.

562. Cognitive Processes. (3:3:0) Prerequisites: Psych. 360, or equivalent; graduate standing or consent of instructor.

A study of major theoretical and empirical developments. Interaction of sensory, perceptual, learning, and thinking processes.

565. Motivational Psychology. (3:3:0) Prerequisites: Psych. 365 or equivalent; graduate standing or consent of instructor.

Theoretical, historical, and empirical overview; recent trends and issues. Role of animal studies; methodological problems.

570. Computer Use in Behavioral Sciences. (3:3:6) Prerequisites: Psych. 370 and Comput. Sci. 231 or equivalent.

The use of electronic digital computers in the behavioral sciences.

572. Psychological Scaling. (3:3:0)

Scaling theory and methodology, with emphasis upon measurement in psychophysics and differential psychology. Offered alternate years.

573. Multivariate Analysis in Psychology. (3:3:0)

The principal descriptive statistics used in the analysis of multiple measurements: factor analysis, canonical correlation, multivariate analysis of variance and covariance, and multiple discriminant analysis. Offered alternate years.

574. Advanced Experimental Psychology. (2:1:5) Prerequisites: Psych. 111 and 374, or equivalent.

Principles of instrumentation and experimental designs. Experience in planning, conducting, and reporting experiments.

577. Laboratory Instrumentation and Techniques. (3:1:4) Prerequisite: Psych. 374.

583. Behavior Modification Techniques. (3:2:2)

Practical applications of behavior modification to academic, discipline, and emotional target behaviors of individuals and groups.

585. Psychophysiology. (3:3:0) Prerequisite: Psych. 385 or consent of instructor.

Critical study of physiological processes and psychological functions, including sensation, emotion, sleep and activity, motivation, and learning.

587. Psychopharmacology. (3:3:0) Prerequisite: Psych. 585 or equivalent.

A study of the major classes of psychoactive drugs, with emphasis on drug-behavioral interactions.

597R. Independent Research. (1-3:0:2-6 ea.)

630. (Sociol.-Psych.) Attitude Change. (3:3:0) Prerequisite: consent of instructor.

Study of attitude development, change, and assessment, including a focus on both individual and mass persuasion.

640. Psychodiagnostics 1: Intelligence Testing. (3:3:5) Prerequisite: acceptance in clinical psychology, school psychology and counseling and guidance.

641. Psychodiagnostics 2: Child and Adolescent. (3:2:6) Prerequisite: acceptance in clinical or school psychology program.

642. Psychodiagnostics 3: Adult. (3:2:3) Prerequisite: acceptance in clinical psychology.

644. Rorschach Techniques. (3:2:5) Prerequisite: acceptance in clinical psychology.

645. Issues in Clinical Psychology. (3:3:0) Prerequisite: acceptance in clinical psychology.

646. Community Mental Health. (3:2:2) Prerequisite: acceptance in clinical psychology.

651. Psychopathology. (3:3:2) Prerequisite: acceptance in clinical psychology.

670. Advanced Statistics 1. (3:3:2) Prerequisite: Psych. 370.

671. Advanced Statistics 2. (3:3:2) Prerequisite: Psych. 670.

675. Personality Dynamics. (3:3:0) Prerequisite: acceptance in clinical psychology.

☐ **Org. Behav. 675. Theory and Method of Laboratory Training.** (3:2:2)

678. Measurement Theory. (3:3:0)

680. Psychotherapy 1: Child and Family. (3:3:3) Prerequisite: acceptance in clinical psychology and school psychology.

681. Psychotherapy 2: Adult. (3:3:0) Prerequisite: acceptance in clinical psychology.

682. Psychotherapy 3: Group. (3:1:6) Prerequisite: acceptance in clinical psychology.

683. Behavior Modification Therapy. (3:2:1) Prerequisite: acceptance in clinical psychology.

685. Advanced Psychophysiology. (3:3:0)

690. Seminar: Research Problems. (2:2:0)

695R. Independent Readings. (1-2:Arr:Arr. ea.)

699R. Master's Thesis. (6-9:Arr:Arr. ea.)

740R. Clinical Practicum. (3:0:8 ea.) Prerequisite: acceptance in clinical psychology.

741R. Practicum in Assessment. (3:0:8 ea.) Prerequisite: acceptance in clinical psychology.

742R. Projects in Clinical Psychology. (3:0:8 ea.) Prerequisite: acceptance in clinical psychology.

749R. Clinics Practicum. (1-2:0:3-6 ea.) Prerequisite: acceptance in clinical psychology.

750, 751, 752, 753. Clinical Internship. (2:0:40 ea.) Prerequisite: acceptance in clinical psychology.

790R. Seminar: Developmental. (2:2:0 ea.) Prerequisite: consent of instructor.

792R. Seminar: Social Psychology. (2:2:0 ea.) Prerequisites: consent of instructor; Sociol.-Psych. 350.

795R. Seminar: Experimental Psychology. (2:2:0 ea.) Prerequisite: consent of instructor.

796R. Seminar: Clinical Psychology. (2:2:4 ea.) Prerequisite: acceptance in clinical psychology.

797R. Independent Research. (1-4:0:3-12 ea.) Prerequisite: consent of instructor.

799R. Ph.D. Dissertation. (Arr.)

Recreation Education

Professors. Call, Hafen (chairman, 273-C RB), Hartvigsen, Jensen, Shaw (college coordinator, 221-F RB).
Associate Professors. DeHoyos, Heaton, Naylor, Olsen, Thorstenson.
Assistant Professor. Hansen.

Programs. Master of Arts (M.A.), Master of Recreation Education (M.R.Ed.).

Entrance Examination Required. Cooperative English Test 2A, Effectiveness of Expression.

Application Consideration Dates. Same as Graduate School deadlines.

Entry Times. Any regular registration.

Master of Arts

Prerequisites. Undergraduate major or minor in recreation. Upon special permission, students may be admitted with other undergraduate work but must complete selected prerequisite classes.

Fields. Community school leadership, municipal recreation administration, outdoor recreation, therapeutic recreation.

Minors Permissible. Any established graduate minor in a complementary discipline.

Requirements. Minimum of 26 semester hours plus thesis (6-hr. min.).

Required Courses. Community school option: Rec. Ed. 585, 605, 679R, 692 or EdPsy-InSci. 600, EdAd. 696R, and EdAd. 675 or Rec. Ed. 505. All other options: Rec. Ed. 609, 692, 694 and Statistics 552. For further information consult department outline.

Master of Recreation Education

Prerequisites. Undergraduate major or minor in recreation. Upon special permission, students may be admitted with other undergraduate work but must complete selected prerequisite classes.

Fields. Community school leadership, municipal recreation administration, outdoor recreation, therapeutic recreation.

Minors Permissible. Any established graduate minor in a complementary discipline.

Requirements. Minimum of 36 semester hours.

Required Courses. Community school option: Rec. Ed. 585, 605, 679R, 692 or EdPsy-InSci. 600, EdAd. 696R, and EdAd. 675 or Rec. Ed. 505. All other options: Rec. Ed. 585, 609, 692, and 694. For further information, consult department outline.

Courses

502R. Camping Workshop. (2:2:4 ea.) Fee required.
 Hansen

Features training and preparation for a week of laboratory experience in a primitive area. A maximum of 4 credit hours permitted.

503. Administration of School and Community Camps. (2:2:Arr.) Hansen

Administration of camps and outdoor programs, site selection and development, and program planning and staffing.

505. Administration of Community Recreation. (3:3:0)
 Prerequisites: Rec. Ed. 301, 337. Naylor

Facilities, personnel, financing, budget, legal aspects, and departmental organization as they relate to community recreation.

570. Therapeutic Recreation for Neurological Handicaps. (2:1:2) Prerequisites: Rec. Ed. 370, 470, or equivalent. Call

Recreation programs in school, community, and hospital settings, for individuals with neurological and other handicaps.

583. Workshop in Recreational Dance. (1-2:0:40-80) Heaton
 Advanced techniques for teaching dance to recreation groups.

585. The Community School. (2:2:1) Olsen
 Basic concepts of the community school, including its history, organization, funding, leadership, facilities, and value to the community.

605. Community School Administration. (2:1:Arr.) Olsen
 Analysis of administrative problems related to leadership, organization, finance, legal aspects, and public relations.

609. The Recreation Program. (2:1:Arr.) Naylor, Thorstenson
 A practicum in the analysis and design of community and agency recreation programs.

679R. Internship in Community School Leadership. (1-6:1-6:3:30 ea.) Olsen

Students are assigned to work with experienced directors, with whom they may gain practical experience. A maximum of 12 credit hours permitted.

692. Research Methods in Recreation. (3:3:0) DeHoyos, Shaw
 Preparation of the research proposal and guidelines to writing the thesis.

694. Seminar in Readings. (2:2:0) Hafen
 Readings from professional literature. Includes group discussion of pertinent materials.

696R. Seminar in Problems. (1-2:1-2:0 ea.) Olsen
 A maximum of 4 credit hours permitted.

698. Field Projects. (1-4:Arr.:Arr.) Hafen

699R. Thesis for Master's Degree. (6-9:Arr.:Arr. ea.)

Religious Instruction

Ancient Scripture

Professors. R. L. Anderson, Nibley (emeritus), Patch, Rasmussen.

Associate Professors. Cheesman, Harris, Matthews (chairman, 122 JSB), Nyman, H. D. Peterson, Ricks.

Entry Times. Any regular registration.

Minors in the Department of Ancient Scripture

Prerequisites. There is no undergraduate major in scriptural studies at BYU. It is recommended that undergraduates get a strong background through course work and study in the scriptures.

Minors Permissible. Option I or II.

Requirements. A minimum of 9 semester hours of approved course work, 5 of which must be taken in residence.

This program is designed primarily to serve the needs of the LDS seminary and institute teachers.

Some students may be interested in applying course work from this department toward a graduate degree in

the new interdepartmental Institute of Ancient Studies. Information about it may be requested from the dean of the Graduate School, from the chairman of the Department of Ancient Scripture, or from the chairmen of other participating departments.

Courses

501. Analysis of the Old Testament: The Pentateuch and Historical Books. (3:3:0)
502. Analysis of the Old Testament: Prophetic Books. (2:2:0)
503. Analysis of the Old Testament: Poetic and Wisdom Literature. (2:2:0)
- 510R. Special Topics in Ancient Scripture. (2-3:2-3:0 ea.)
511. The Gospels. (2:2:0)
512. Paul's Life and Letters. (2:2:0)
513. The General Epistles and the Apocalypse. (2:2:0)
514. Historical Background of the New Testament. (2:2:0)
- 521, 522. Analysis of the Book of Mormon I, 2. (3:3:0 ea.)
523. External Evidences of the Book of Mormon. (2:2:0)
527. History and Doctrines of the Pearl of Great Price. (3:3:0)
606. The Apocrypha and Pseudepigrapha. (2:2:0)
- 610R. Graduate Seminar in Ancient Scripture. (1-6:1-2:0 ea.)
- 620R. Readings in Ancient Scripture. (1-6:0:0 ea.)
- 799R. Ph.D. Dissertation. (Arr.)

Church History and Doctrine

Professors. Andrus, Backman, Barron, L. Berrett, Bowen, Burton, Cowan, Doxey (emeritus), Hartshorn, Horsley, Palmer, Rich, Turner.

Associate Professors. G. Anderson, Cannon, Fugal, Garrard, M. Petersen, Porter (Chairman, 123 JSB).

Assistant Professor. Perkins.

Minors in Church History and Doctrine

Prerequisites. Relig. 341, 342, or a knowledge of the contents of *The Comprehensive History of the Church*, by B. H. Roberts.

Fields. Christian history, Doctrine and Covenants, LDS history, theology, world religions.

Requirements. A minimum of 9 semester hours of approved course work. Five of the 9 hours must be completed on the BYU campus.

Courses

- 524, 525. Analysis of the Doctrine and Covenants I, 2. (3:3:0 ea.)
530. LDS Theology. (2:2:0)
- 540R. Special Topics in Church History and Doctrine. (2-3:2-3:0 ea.)
- Social, Economic, and Political Thought of Joseph Smith
 - Schismatic Movements in Mormon History
 - Historical Setting of Mormonism
 - LDS Church History by Travel Study
 - Comparative Studies in American Religions
 - Religions in the Ancient Near East
 - The Church in Asia

541. Documents of LDS Church History (1820-1839). (3:3:0)
542. Documents of LDS Church History (1839-1850). (3:3:0)
543. Documents of LDS Church History (1850-1900). (3:3:0)
544. Documents of LDS Church History (1900 to Present). (3:3:0)
551. History of the Early Church through the Fourth Century. (3:3:0)
552. Medieval and Reformation Christianity. (3:3:0)
553. History of the Christian Church since the Seventeenth Century. (3:3:0)
555. Comparative World Religions. (2:2:0)
556. Comparative World Religions. (2:2:0)
- 640R. Graduate Seminar in Church History and Doctrine. (1-6:1-2:0 ea.)
- Graduate Seminar in the Doctrine and Covenants
 - Graduate Seminar in LDS Church History
 - Graduate Seminar in LDS Theology
 - Graduate Seminar in Christian History
 - Graduate Seminar in Christian Theology
 - Graduate Seminar in World Religions
- 650R. Readings in Church History and Doctrine. (1-6:0:0 ea.)
- Readings in Doctrine and Covenants
 - Readings in LDS Church History
 - Readings in LDS Theology
 - Readings in Christian History
 - Readings in Christian Theology
 - Readings in World Religions
799. Ph.D. Dissertation. (Arr.)

Sociology

Professors. Bahr (graduate coordinator, 172 FOB), Bradford, Brower, Burr, Christiansen, Duke, Larsen, Peterson, Smith, Staley, Warner.

Associate Professors. Albrecht, Blake, Chadwick, Condie (chairman, 184 FOB), Craig, G. DeHoyos, England, Kunz, Seggar, Spencer.

Programs. Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required. The Graduate Record Examination, including the aptitude test and the advanced test in sociology.

Application Consideration Dates. April 15 for Fall Semester, October 15 for Winter Semester, February 15 for Spring Term, and March 15 for Summer Term.

Entry Time. Any regular registration.

Master of Science

Prerequisites. Minimum of 15 semester hours (or equivalent) in sociology, including courses in introductory sociology, statistics, methods of research in sociology, development of sociological theory, and contemporary sociological theory.

Field. General sociology (with an emphasis on either social organization or social psychology).

Minors Permissible. Option I or II. However, all candidates for the M.S. must complete 18 hours of required classes, including 12 hours in tool areas and the 6-hour graduate survey course in either social organization or social psychology.

Requirements. (1) Completion of 30 hours of graduate work, including 24 hours in regular course work and 6 hours on thesis project; (2) Demonstration of competence in the following tool areas, both by completion of required course work and examination: sociological theory, research methods, and statistics; (3) Demonstration of competence, by adequate performance in a comprehensive written examination, in the substantive areas of either social organization (including social stratification, social change, complex organizations, community, and social institutions) or social psychology (including attitude and behavior, major social psychological theories, social influence, dynamics of attitude change, personality and culture, small groups, communication, leadership, and social exchange); (4) Completion and oral defense of an acceptable thesis.

Required Courses. Sociol. 600, 606, 610, 611, and 620 (6 hr.).

Doctor of Philosophy

Prerequisite. A master's degree in sociology or the equivalent.

Fields. Family sociology, family studies (see page 67), social organization, social psychology.

Minors Permissible. An approved minor field.

Requirements. (1) Completion of 60 semester hours of acceptable graduate work, including at least 48 semester hours of graduate work in sociology completed in graduate status, exclusive of the doctoral dissertation and the master's thesis; (2) Demonstration of competence at the doctoral level in the following tool areas, both by completion of required course work and examination: sociological theory, research methods, and statistics; (3) Demonstration of competence, by adequate performance in a comprehensive written examination, in two of the following special areas: social organization, social psychology, deviant behavior, race and ethnic relations, family sociology, demography and human ecology; (4) Preparation and oral defense of a dissertation project prospectus; (5) Completion and oral defense of an acceptable dissertation.

Required Courses. All courses required for the Master of Science degree in sociology or their equivalent, and Sociol. 700, 706, and 711, plus at least 9 hours of graduate coursework in each of the two special areas selected for comprehensive examinations.

Graduate Minor in Sociology

A student working toward a master's degree in another department may complete a minor in sociology by satisfactorily completing Sociol. 610 plus graduate semester hours in areas related to his major specialization, as approved by his advisory committee.

A student working toward a doctoral degree in another department with a minor in sociology must, in collaboration with the member of his committee from the sociology faculty, outline a program in accordance with the needs of the student. The student selects a specialty area from the fields listed above and must take the same comprehensive examination given to students from the Department of Sociology who have selected that area.

Courses

504. Mathematical Sociology. (3:3:0) Prerequisite: Math. 105. England

Mathematical techniques of simulating and modeling social processes.

522. Social Stratification. (3:3:0) Prerequisite: Sociol. 111. DeHoyos, Duke

Status, class, and power systems in various societies.

525. Sociology of Religion. (2:2:0) Seggar, Staley

Influences of social factors in the development of various religious systems.

526. Sociology of Education. (2:2:0) Craig, Smith
Social origins of goals and curricula; theories of change and control; and the nature of achievement in education.

552. Personality: Culture and Society. (3:3:0) Prerequisite: Sociol. 111 or Psych. 111. DeHoyos, Staley

The role of culture and society in the forming and functioning of personality. Compares various peoples and cultures.

555. (Sociol.-Psych.) Group Dynamics. (3:3:0) Prerequisite: Sociol.-Psych. 350. England

560. The Family Institution. (3:3:0) Bradford, Christiansen
The family in several different societies, and problems created by various family systems.

590R. Special Topics in Sociology. (1-3:1-3:0 ea.) Prerequisite: consent of instructor.

595R. Directed Readings. (1-3:0:2-6 ea.)

600. Advanced Research Methods. (3:3:0) Prerequisite: Sociol. 300 or consent of instructor. Bahr,

Chadwick, Johnson
Investigation of sociological data; field projects.

601. Seminar in Survey Research. (3:3:0) Prerequisite: Sociol. 300 or equivalent; graduate standing in sociology or allied discipline. Chadwick, Christiansen, Johnson

Survey research as a specific research technique of the behavioral sciences, with emphasis on research and sampling designs.

602. Experimental Design in Sociology. (3:3:0) Prerequisites: Sociol. 300 or equivalent, graduate standing in sociology or allied discipline. England

606. Intermediate Statistics. (3:3:0) Prerequisite: Sociol. 206. England

Hypothesis testing and decision making for sociologists.

610. Seminar in Contemporary Sociological Theory. (3:3:0) Prerequisites: Sociol. 411 and 412. DeHoyos, Duke

Recent developments in theory, including structural-functionalism, conflict theory, general systems theory, exchange theory, and symbolic interactionism.

611. Seminar in Sociological Theory Building. (2:2:0) Prerequisite: Sociol. 610. Condie, Peterson

612. Seminar in the Development of Sociological Theory. (2:2:0) Prerequisite: Sociol. 610. Duke

Contributions of sociological theorists, including Durkheim, Weber, Pareto, and Simmel, to sociological theory development.

620. Theory and Research in Social Organization. (6:6:0) Prerequisite: admission to graduate sociology program; others in graduate program admitted by consent of instructor. Kunz, Warner

Graduate survey of the field of social organization and of the core subfields therein, including: social stratification, social movements and change, complex organizations, community, and institutions.

623. Seminar in Race and Ethnic Relations. (3:3:0) Chadwick

630. (Sociol.-Psych.) Attitude Change. (3:3:0) Prerequisite: graduate standing or consent of instructor. Albrecht, Blake, Larsen

Theoretical approaches to the study of attitude development, change, and assessment, including a focus on both individual and mass persuasion.

650. Advanced Social Psychology. (3:3:0) Prerequisite: admission to graduate sociology program, others in graduate program admitted by consent of instructor. Albrecht

660. Familial Role Structure. (3:3:0) Prerequisite: Sociol. 340. Bradford, Kunz

Characteristics and problems of roles in the family in various societies, with emphasis on the United States.

670. Contemporary Urban Social Structure. (3:3:0) Prerequisite: Sociol. 370. Staley

Research-oriented examination of social forces in contemporary urban life which influence patterns of human interaction.

681R. Seminar in Deviance, Crime, and Corrections. (3:3:0 ea.) Prerequisites: Sociol. III and 381. Smith

Research and theory concerning criminal typologies. A diagnostic course to complement Sociol. 582.

697R. Directed Research. (1-3:0:2-6 ea.)

699R. Thesis for Master's Degree. (Arr.)

700. Sociological Measurement. (3:3:0) Prerequisites: Sociol. 600, 606, 706. England, Johnson

Unidimensional and multidimensional measurement techniques, with emphasis on theoretical, methodological, and substantive consequences of technique selection.

706. Advanced Statistical Methods. (3:3:0) Prerequisite: Sociol. 606. England

Factor analysis, multivariate analysis, and covariate analysis.

711. Sociological Theory and Theory Building. (3:3:0) Prerequisites: Sociol. 600, 606, 610, and 8 hours additional sociological theory. Condie, Duke

Exploration of latest contributions to theory and current endeavors in the construction of sociological theories.

720R. Seminar: Social Organization. (1-3:1-3:0 ea.)

Prerequisites: Sociol. III and 320. Albrecht, Kunz, Warner

750. Seminar: Social Psychology. (3:3:0) Prerequisites: Sociol. 350 and consent of instructor. Blake, Chadwick, Larsen

799R. Dissertation for Ph.D. (Arr.)

Statistics

Professors. Carter, Faulkner, Hilton (chairman, 206 TMCB), Nielson, Richards.

Associate Professors. Beus, Bryce (graduate coordinator, 210 TMCB), Crandall, Hendrix, Rencher.

Assistant Professor. Christensen.

Program. Master of Science (M.S.).

Entrance Examinations Required. None.

Application Consideration Dates. Fall Semester, June 30; Winter Semester, November 15; Spring or Summer terms, March 10. If application is also made for financial assistance, all forms should be received three months prior to each of the above deadlines.

Entry Times. Fall Semester recommended, or Spring Term if Stat. 501 (or equivalent) has not been completed.

Master of Science

Prerequisites. Stat. 501, Math. 315, and Comput. Sci. 131 or their equivalents.

Fields. Applied or theoretical statistics.

Minors Permissible. Option I or II.

Requirements. Minimum of 24 semester hours plus thesis (6-hr. min.—699R). Each student must pass a written examination over the material covered in Stat. 501, part of 502, 520, and 521, before beginning his thesis research.

Required Courses. Stat. 636; 2 hours of Stat. 591R; one course from Stat. 611, 621, 631, 632, 690R; all of the following courses unless taken as an undergraduate: Stat. 520, 521, 522, 531 (or 534). Foreign students may be required to take ESL 101 or 102, depending on the outcome of an interview with the department after their arrival at Brigham Young University.

This program is designed to prepare students for (1) work in industry or government or (2) Ph.D. work in statistics.

Minor Programs

Master's Level. 9 hours in any statistics course numbered 300 and above (except 552).

Ph.D. Level. Stat. 520 and 521, plus 9 additional hours from statistics courses numbered 433 and above (except 501, 552, and 554).

Courses

501. Statistics for Research Workers 1. (5:4:3) Prerequisite: Math. 105 or equivalent. Beus, Carter, Hilton

Probability; estimation; tests of hypotheses; regression; analysis of variance; nonparametric methods. For natural or social science students.

502. Statistics for Research Workers 2. (5:4:3) Prerequisite: Stat. 501 or equivalent. Beus, Carter, Hilton

Analysis of covariance; multiple regression; linear models; design of experiments; sampling. For natural or social science students.

520, 521. Theory of Statistics 1, 2. (3:3:0 ea.) Prerequisite: Math. 214 or equivalent.

Development of the theory of discrete and continuous distribution functions, including derived sampling distributions; tests of hypotheses and point and interval estimation.

522. Theory of Linear Models. (4:4:0) Prerequisite: Stat. 521. Nielson, Rencher, Richards

Linear hypotheses, with application to regression and design.

531. Experimental Design. (3:3:0) Prerequisite: Stat. 337 or 501. Carter, Hilton

Randomized blocks, Latin squares, factorial designs, fractional replication, confounding, and incomplete blocks.

534. Sampling. (3:3:0) Prerequisite: Stat. 337 or equivalent. Crandall, Nielson

Systematic, simple random, stratified, and cluster sampling; optimum allocation; ratio estimation; etc. Applications to various fields.

536. Regression Analysis. (3:3:0) Prerequisite: Stat. 337 or 501. Carter, Rencher

Multiple regression; introduction to model building and nonlinear estimation; examination of residuals; stepwise regression; Hocking-Leslie algorithm.

541. Advanced Probability. (3:3:0) Prerequisite: Math. 214. Recommended: completion of or concurrent registration in Stat. 520. Faulkner, Rencher

Advanced combinatorial methods; random walk; introduction to Markov chains and stochastic processes.

552. Statistical Methods in Education 1. (3:3:0) Prerequisite: consent of instructor. Beus, Hendrix

Measures of central tendency, variability; correlations; introduction to probability and statistical inference. Computer usage stressed. For majors in education and related fields.

554. Statistical Methods in Education 2. (3:3:0) Prerequisite: Stat. 552. Hendrix

Educational computer applications of analysis of variance and covariance, multiple and partial regression and correlation, and nonparametric methods. Introduction to experimental design.

591R. Graduate Seminar in Statistics. (1:1:0 ea.)**611. Multivariate Statistical Methods.** (3:3:0) Prerequisite: Stat. 337 or 502. Rencher

Inference about mean vectors and covariance matrices; multivariate analysis of variance and regression; canonical correlation; discriminant analysis; principal component analysis; factor analysis.

621. Advanced Theory of Statistics. (3:3:0) Prerequisites: Math. 315; Stat. 521. Recommended: Stat. 522. Faulkner, Nielson, Rencher

Advanced topics in the theory of estimation, testing hypotheses, multiple regression, and multivariate analysis.

631. Advanced Experimental Design. (3:3:0) Prerequisites: Stat. 521, 531. Recommended: Stat. 522. Carter, Nielson

Advanced topics in experimental design. Offered 1977 and alternate years.

632. Advanced Industrial Statistics and Reliability. (3:3:0) Prerequisites: Stat. 432, 521, or equivalent.

Advanced topics in sequential sampling, tolerance limits, life testing, and reliability.

636. Advanced Statistical Methods. (3:3:0) Prerequisites: Stat. 337 (or 502), 521. Carter, Richards

Analysis of variance with unequal subclass frequencies, including missing cells; analysis of covariance; orthogonal polynomials; multiple comparisons and related topics.

690R. Special Topics in Statistics. (3:3:0 ea.) Prerequisite: consent of instructor.

Specialized topics in statistics, varied from time to time.

695. Readings in Statistics. (1-3:1-3:0) Prerequisite: consent of department.**699R. Thesis for Master's Degree.** (6-9:Arr.:Arr.) Prerequisite: consent of department.

Theatre and Cinematic Arts

Professors. Danielewski, Gledhill, Hansen, Metten (chairman, D-581 HFAC), Woodbury.

Associate Professors. Henson, Oaks, Pope, Whitman.

Assistant Professors. Frost, Golightly, Jenkins.

Programs

Theatre and Cinematic Arts: Master of Arts (M.A.), Doctor of Philosophy (Ph.D.).

Theatre and Cinematic Arts: Master of Arts

Prerequisites. Acceptable undergraduate background in dramatic arts.

Field: Theatre and Cinematic Arts (with emphasis in theatre history, theory and criticism, motion picture history, acting, directing, interpretation, technical theatre, playwriting, screenwriting, child drama, or theatre administration).

Minors Permissible. Option I or II.

Requirements. 26 hours plus thesis (6-hr. min.—699R); or 32 hours plus a written report of project (to be filed with Graduate School) and a comprehensive written and oral examination.

Required Course. ThCA 690, required of all graduate students during first semester of registration.

Theatre and Cinematic Arts:
Doctor of Philosophy

Field. Theatre and Cinematic Arts.

Requirements. 45 hours in theatre and cinematic arts, 15 hours in a minor, plus a dissertation (18-hr. min.—799R). Three kinds of dissertation research will be accepted: (1) scholarly analysis of theatre and/or motion picture/television history, theory, and criticism; (2) research and strong creative achievement in playwriting or screenwriting and stage or cinematic arts production; and (3) measurement studies.

Required Courses. ThCA 690 and 799R.

Courses

517R. Genres and/or Directors of Motion Picture Art. (3:1:2 ea.) Prerequisite: ThCA 417R or equivalent.

Intensive study of selected film genres, i.e., musicals, westerns, etc., or directors, i.e., Ford, Welles, Bergman, etc. Different genres and/or directors are treated each time course is offered.

522R. Acting 5. (5:5:6 ea.) Prerequisite: ThCA 324R. Hansen

Theory and practice of major historical and modern styles of acting and actor preparation.

524R. Acting 6. (5:1:2 ea.) Prerequisites: ThCA 522R or equivalent, and acting competency shown in audition. Crosland, Whitman

Supervised applied acting experience in full-length play produced for an audience.

527. Storytelling. (2:2:0) Gledhill

The utilization of principles, practice, materials, and visual aids to create imagery in storytelling. Valuable to teachers and youth leaders.

560R. Theatre Workshop 2. (1-6:0:3-18 ea.)

Integration in production of theatre's individual arts: literature, directing, acting, and stagecraft.

564. Theatre History 1. (3:3:0) Hansen

The history of the theatre: from primitive, Egyptian, Greek, Roman, Medieval, and Elizabethan periods to LDS theatre history.

565. Theatre History 2. (3:3:0) Metten

The history of the theatre: Oriental; Renaissance—Italy and France; Romanticism and the well-made play; birth and development of realism; departure from realism.

572R. Child Drama 3. (2:3:0 ea.) Oaks

The study of theory and techniques of formal drama for and with children.

578R. Playwriting 2. (2:2:0 ea.) Whitman

Theories and techniques of conceiving and expressing experience as dramatic literature.

617R. The American Motion Picture. (3:1:2 ea.) Prerequisite: ThCA 417R or equivalent. Danielewski

Intensive study of the history and development of the American motion picture as an art form and a business, from its beginning through the studio complexes to contemporary times.

660R. Seminar in Interpretation. (3:3:0 ea.) Prerequisites: ThCA 121, 123, 325, or equivalent. Gledhill

Three subject matter areas are offered in rotation: 1. Interpretation of history and theory; interpretation of classical literature. 2. Program building; lecture recitals. 3. Research-analysis of interpretation techniques and performance, including interpretative theatre.

664. Theatre Administration 1. (2:2:0) Henson

Study of theatre-management theory and practice, including budget, promotion, box office, etc.

665. Theatre Administration 2. (2:2:0) Henson

Study of theatre-administration theory and practice, including organizational philosophy, structure, development, etc.

668R. Special Studies in Theatre History. (1-3:1-3:0 ea.)

Supervised research in selected historical problems.

670. Technical Theatre 3. (5:5:3) Prerequisite: ThCA 320, or consent of instructor. Pope

Advanced theories and practices of scenic design, construction, lighting, special and technical management for the theatre.

671. Directing 3. (3:2:2) Prerequisites: ThCA 460, 461R or equivalent. Hansen, Metten

An advanced study of theories and techniques of directing for the stage through the production of two condensed scripts for presentation.

674R. Projects in Theatre. (1-4:1-4:0 ea.)

Supervised applied theory in playwriting, directing, acting, and stagecraft.

678. Stage Lighting. (1-2:1-2:0) Prerequisite: ThCA 320, or consent of instructor. Johnston, Pope

Advanced theory and techniques of theatrical lighting.

690R. Research in Theatre and Cinematic Arts. (2:2:0) Pope

Research, design, analysis, and strategies in speech communication. Required of all graduate students. It is imperative that graduate students take this course during their first semester.

697R. Seminar in Special Theatre Forms. (2-3:2:1 ea.)

Theory and practice of editing, directing, and dramatizing for special theatre forms (i.e., readers' theatre, arena theatre, etc.).

699R. Thesis for Master's Degree. (6-9:Arr.:Arr.)

731. Dramatic Theory and Criticism 1. (5:5:0) Metten

An intensive survey of the history and principles of dramatic theory and criticism from ancient to contemporary times.

733. Dramatic Theory and Criticism 2. (3:3:0) Hansen

A study and analysis of the major dramatic forms: tragedy, comedy, melodrama, and farce, combined with the theory of directing nonconventional dramatic literature.

740. Seminar in the Theory and History of Theatrical Costuming. (2:2:1) Pope

760. Directing 4. (2:2:0) Prerequisites: ThCA 564, 565, 671. Hansen

Theory and techniques of directing and staging historical and period plays: Greek, Roman, Medieval, Elizabethan, Restoration, and Continental plays.

761. Directing 5. (2:2:0) Prerequisites: ThCA 564, 565, 671, 733. Woodbury

Theory and techniques of directing and staging plays from the modern and abstract repertoire: Expressionism, Constructivism, Epic, Absurd, Oriental, Cruelty, Happenings.

797R. Research. (1-6:Arr.:Arr. ea.)

799R. Dissertation for Ph.D. Degree. (Arr.)

Zoology

Professors. Allen, Allred, Andersen, Chapman, Frost, C. L. Hayward (emeritus), Heninger, Jaussi, Jorgensen (chairman, 575-A WIDB), Murphy, V. Tanner (emeritus), W. Tanner, Tipton, Wood.

Associate Professors. Barnes, Booth, Braithwaite, Heckmann, Miller, Seegmiller, Smith (graduate coordinator, 163 WIDB), White.

Assistant Professors. Bradshaw, Farmer, G. L. Hayward, Jeffery, Rhees, Whitehead.

Programs. Master of Science (M.S.), Doctor of Philosophy (Ph.D.).

Entrance Examinations Required. Graduate Record Examination prior to consideration for admission and a

departmental written examination during the first semester of resident study.

Application Consideration Dates. Prior to March 1 for Fall Semester and October 1 for Winter Semester.

Entry Times. Fall or Winter semesters.

Master of Science

Prerequisite. B.S. degree in zoology from an accredited college or university, or the equivalent.

Fields. Biological science education, entomology, genetics, zoology.

Minors Permissible. Any established minor in the biological or physical sciences; Option II.

Requirements. Minimum of 30 semester hours including thesis (6-hr. min.—699R). (Consult graduate coordinator for modified requirements in biological science education.)

Required Courses. Zool. 521; 696R during two semesters of resident study.

Doctor of Philosophy

Prerequisites. Master's degree in zoology or the equivalent. Option II for the two-language requirement or its equivalent may be met by completing 9 credit hours in computer science courses (131 and above), in mathematics (112 and above), in statistics (502 and above), or with a combination of 9 credit hours from these fields.

Fields. Entomology, genetics, zoology.

Minors Permissible. Any established minor in the biological or physical sciences.

Requirements. Minimum of 24 semester hours plus dissertation (18-hr. min.—799R), plus one semester of off-campus study recommended unless M.S. is completed elsewhere.

Required Courses. Zool. 521; 696R during two semesters of resident study.

Courses

☐ **Statistics 501. Statistics for Research Workers I.** (5:4:3)

☐ **Microbiology 511. Immunology.** (4:2:6)

517. Experimental Parasitology. (3:2:3) Prerequisite: Zool. 417. Andersen, Heckmann
Offered 1977-78 and alternate years.

521. Zoological Literature. (2:2:0) Wood
Literature research techniques necessary for zoological research.

☐ **Botany 522. Biological Instrumentation.** (3:1:6)

526. (Zool.-Bot.) Cell Biology. (4:3:3) Prerequisite: Introductory course in biochemistry.

Molecular physiology and ultrastructure of cells and tissues, with emphasis on eucaryotic organisms.

530. Insect Classification. (4:1:6) Prerequisite: Zool. 331. Wood

531. Insect Physiology. (4:2:6) Prerequisites: Zool. 331; Chem. 252 or 351. Whitehead

532. Insect Morphology. (3:2:3) Prerequisite: Zool. 331. Whitehead

534. Economic Entomology. (3:2:2) Prerequisite: Zool. 331. Booth

535. Medical Entomology. (3:2:2) Prerequisite: Zool.

331. Recommended: Micro. 331. Tipton
Insects and arachnids which affect the health of man
and domestic animals.
536. **Comparative Toxicology.** (3:2:3) Prerequisites:
general biology and a course in organic chemistry. Booth
Modes of action and biological transformations of
pesticides in living animals, plants, and the environment.
Techniques emphasized.
538. **Immature Insects.** (2:0:4) Wood
Offered 1977-78 and alternate years.
543. **Ichthyology.** (2:2:2) Prerequisite: Zool. 203.
545. **Herpetology.** (2:1:2) Prerequisite: Zool. 203.
Van De Graaff
546. **Ornithology.** (2:1:2) Prerequisite: Zool. 203.
Frost
547. **Mammalogy.** (2:2:2) Prerequisite: Zool. 203.
Smith
- 549R. **Advanced Topics in Zoology.** (1-4:Arr.:Arr. ea.)
Prerequisite: consent of instructor.
551. **Population Ecology.** (3:2:3) Prerequisites: Zool.
350; concurrent registration in or completion of Stat.
501. Jorgensen
552. **(Zool.-Bot.) Terrestrial Ecosystems.** (4:3:Arr.) Pre-
requisites: Zool. 350; Stat. 221 or 501.
Biotic communities of the earth; population dynamics;
reproductive, life-form, and longevity patterns; species
interactions; and structure, dynamics, and evolution of
communities. Extended field trips.
555. **(Zool.-Bot.) Aquatic Ecosystems.** (3:2:3) Pre-
requisites: Zool. 350 or equivalent; Stat. 211 or 501. Barnes
Analysis of lake and stream ecosystems. Three Satur-
day field trips. One extended field trip.
565. **Endocrinology.** (3:3:0) Prerequisite: Zool. 461.
Heninger, Jaussi
566. **Experimental Endocrinology.** (2:0:6) Prerequisite:
completion of or concurrent registration in Zool. 565.
Heninger, Jaussi
Experiments selected to familiarize students with tech-
niques used in research.
575. **Biochemical Genetics.** (3:3:0) Prerequisites: Chem.
481 and Zool. 371 or equivalents. Bradshaw, Farmer
Emphasis on eukaryotic organisms.
576. **Human Genetics.** (3:3:0) Prerequisite: Zool. 371.
Offered 1976-77 and alternate years.
577. **Developmental Genetics.** (3:3:0) Prerequisites:
Zool. 371, 483. Bradshaw, Jeffery
Control of gene expression during embryonic develop-
ment; genetic mechanisms of cell differentiation.
- ☐ **Geology 580 or 581. Invertebrate Paleontology.** (4:3:2)
- 582R. **Advanced Topics in Developmental Biology.** (2:2:0
ea.) Prerequisite: Zool. 483.
583. **Etiology and Pathology of Brain Injury.** (3:3:0)
Prerequisite: consent of instructor. Chapman
May not be used for credit toward a major in zoology.
584. **Neurology.** (3:2:2) Prerequisite: consent of in-
structor. Chapman
- ☐ **Geology 584. Vertebrate Paleontology.** (4:3:2)
- 591R. **Special Problems in Zoology.** (1-2:Arr.:Arr. ea.)
Prerequisite: consent of instructor.
601. **Zoogeography.** (2:2:0) C. White
Offered 1976-77 and alternate years.
609. **Systematic Zoology.** (2:1:2) Wood
Offered 1976-77 and alternate years.
- ☐ **Microbiology 611. Advanced Immunology.** (2:2:0)
612. **Advanced Invertebrate Zoology 1.** (3:2:3) Pre-
requisite: Zool. 202 or consent of instructor. Braithwaite
Comprehensive biology of the lower Metazoa (Parazoa,
Radiata, Acoelomata, Pseudocoelomata, and lower Proto-
stomia). Offered 1976-77 and alternate years.
613. **Advanced Invertebrate Zoology 2.** (3:2:3) Pre-
requisite: Zool. 612 or consent of instructor. Barnes,
Braithwaite
Comprehensive biology of the higher Protostomia and
Deuterostomia, excluding the terrestrial arthropods. Of-
fered 1976-77 and alternate years.
620. **Theoretical Zoology.** (2:2:0) Prerequisite: consent
of instructor.
- ☐ **Botany 621. Electron Microscopy.** (2:2:0)
- ☐ **Botany 622. Electron Microscopy Laboratory.** (1:0:3)
- ☐ **Microbiology 632. Cell and Tissue Culture Techniques.**
(2:0:4)
- 633R. **Advanced Topics in Entomology.** (1-2:Arr.:Arr. ea.)
Prerequisite: consent of instructor.
- ☐ **Botany 638. Genetics of the Fungi.** (2:2:0)
- ☐ **Microbiology 641. Radioactive Tracer Techniques in
Biology.** (3:1:6)
- 657R. **Advanced Topics in Animal Ecology.** (2:2:0 ea.)
Prerequisite: Zool. 350.
The specific topic will be announced at the beginning
of each semester.
- ☐ **Microbiology 661. Microbial Genetics.** (4:2:6)
662. **Advanced Physiology 1.** (2:1:2) Prerequisite: Zool.
461 or consent of instructor. Jaussi, Heninger
663. **Advanced Physiology 2.** (2:1:3) Prerequisite: Zool.
461 or consent of instructor. Jaussi, Heninger
- ☐ **Botany 676. Cytogenetics.** (3:2:3)
- ☐ **Botany 678. Organic Evolution.** (3:3:0)
- ☐ **Geology 680. Micropaleontology.** (3:2:2)
- ☐ **Geology 685. Paleocology.** (4:3:2)
- 696R. **Graduate Seminar.** (½:1:0 ea.)
- 699R. **Thesis for Master's Degree.** (Arr.)
- 799R. **Dissertation for Ph.D. Degree.** (Arr.)

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